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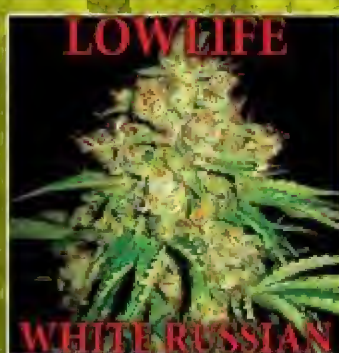
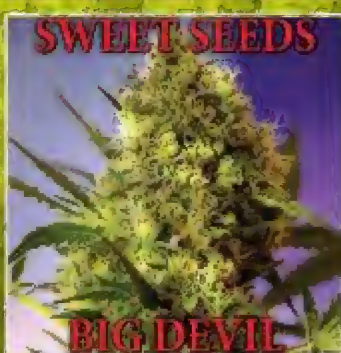
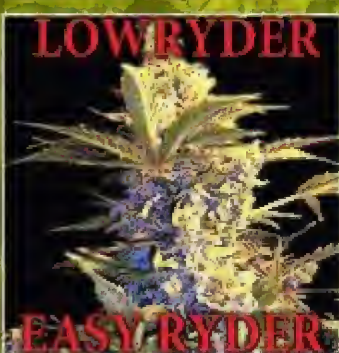
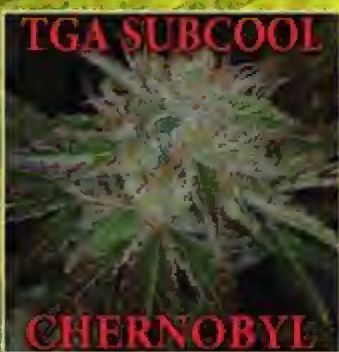
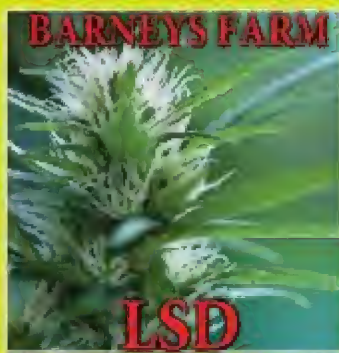
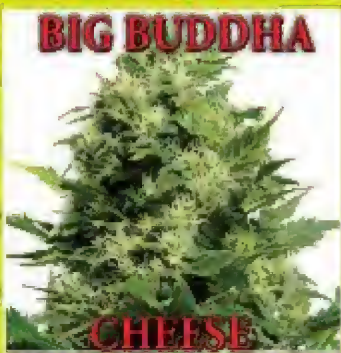
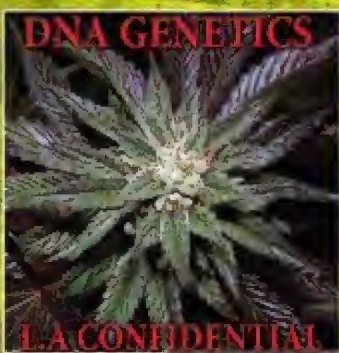
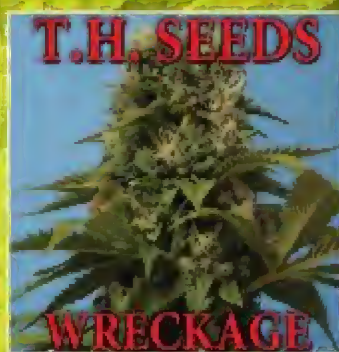
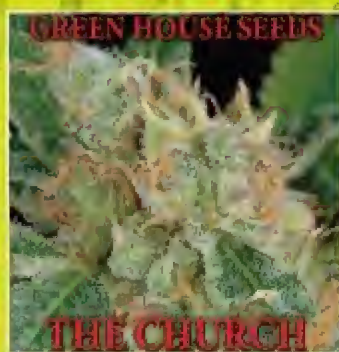
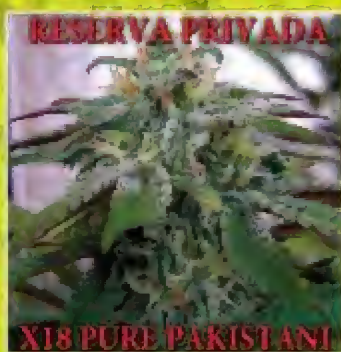
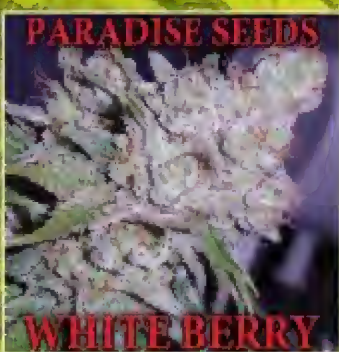
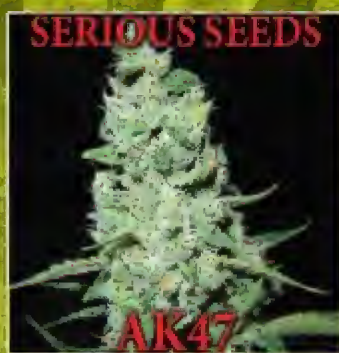
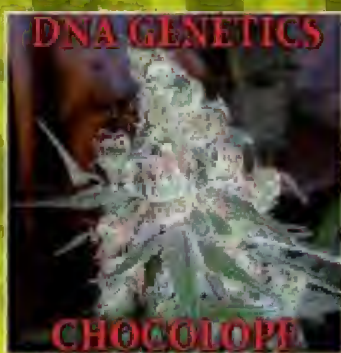
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# HIGH-TECH

Information is power, and the marijuana nation now has access to more information than ever before, which in turn gives us the power to change the world. Never in the history of humankind have stoners across the globe been so interconnected and so well informed. In fact, the free flow of knowledge has turned a new generation of activists into a breed of super-activists who are far more empowered and better informed than their boomer parents ever dreamed—and it's certainly no coincidence that cannabis prohibition, which is based on lies, is crumbling under the weight of the collective truth that this shared knowledge has provided us.

This month, HIGH TIMES is very proud to roll out two new pieces of information technology that will make our magazine a more useful tool for our readers and accelerate this trend.

The first new IT item you'll find in the pages themselves, and it looks like this:



HIGH TIMES links to your mobile phone.

FREEBIE



Once you've installed "tag-reading" software on your mobile device, you'll be able to use the camera to scan these tags and get additional content. To try it now: Go to [hightimes.com/tag](http://hightimes.com/tag), install the application on your mobile device, then give this tag a scan.

The second item is HIGH TIMES' brand-new iPhone app, CANNEX: The Medical Cannabis Index, a consumer tool designed to help patients locate better medicine. Patients can use CANNEX to find medical-marijuana dispensaries, view their menus, and even rate and review the strains they carry. We hope that CANNEX can help people to become better-educated consumers with a greater awareness of the large developing cannabis market in all of the medical states.

Finally, as always, we stand on the shoulders of those who came before us. I realized this while developing our iPhone app, when I had to submit a document to Apple with the signature of our late founder, Thomas King Forçade, in order to move the project forward. I mean, during the course of his life, which ended in 1978, Tom never experienced the Internet, never used a cellular phone and, sadly, never lived to see the current state of medical-marijuana policy—let alone the possibility that someday soon, the first of these United States may decide to fully legalize cannabis. And yet, thanks to Tom, here we are today—launching a HIGH TIMES service on the iPhone platform for the medical-marijuana community. I'm a little sad that Tom isn't here to be a part of it all, but I'm also very proud that his legacy continues and that a document bearing his signature was the first step in bringing this new technology to life.

Thanks again, Tom. The HIGH TIMES staff is still standing on your shoulders, and the view from up here is outstanding.

Visit [hightimes.com/tag](http://hightimes.com/tag) to learn more about tags.  
Visit [hightimes.com/app](http://hightimes.com/app) to learn more about CANNEX.

Craig Coffey  
Director of Technology

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# HIGH TIMES



## FEATURES

### 34 IN SEARCH OF MAUI WOWIE

Hawaiian cannabis correspondent South Bay Ray goes island-hopping to visit some of the best growers creating the kind of potent pot that made this tropical archipelago state famous. Also, catch up on the continuing fight to ensure medical-marijuana access for patients here in "paradise."

### 40 BOB MARLEY'S INTERNATIONAL IMPACT

BY ROGER STEFFENS

From the Balkans to Brazil, from the Grand Canyon to the frozen Himalayas, Bob Marley remains the most celebrated singer on the planet.

### 46 THE ROAD TO ACCOMPONG

BY CHRIS SIMUNEK. PHOTOS BY BRIAN JAHN

Before a ragtag band of colonists fired the "shot heard round the world" that started our revolution against the British, a group of escaped slaves in Jamaica fought the redcoats and won their own independence. Known as the Maroons, today their descendants continue to live under their own autonomous rule deep in the mountains of Jamaica.

### 56 BUBBLING BUCKETS

BY BOB LEE GORON. PHOTOS BY OAN SKYE

Recirculating deep-water culture (RDWC) is the process of growing plants in an inert, absorbent medium (such as hydroton or expanded clay pellets) contained in a basket that sits over a reservoir filled with nutrient solution. It's a "fail-safe" system that's surprisingly easy to set up and use, and it just may be the future of hydroponic growing. Learn how to build yours!

### 66 WEST SIDE GROWING

BY NICO ESCONOIIO

With the burgeoning shift in political climate and public attitudes, the west side of the United States is almost another world when it comes to marijuana. And those in the cannabis-cultivation business have to keep up with the growing demand while pushing the limits of their indoor capabilities. HT's cultivation editor reports on how the West Side is doing it, from the individual (or "functional") grower to the more advanced commercial ops.

### 78 HASHISH!

An exclusive excerpt from the new second edition of *HASHISH!*, the legendary book by Robert Connell Clarke that covers pretty much everything you ever wanted to know about hashish. As a special bonus, we're also featuring an exclusive new article by Clarke and his fellow expert, Mel Frank, that will teach you how to make premier water-extraction hash.

### 86 THE HIGH TIMES INTERVIEW: DAMIAN & NAS

Just in time for the release of their much-anticipated collaboration, *Distant Relatives*, the Grammy-winning, chart-topping Damian Marley teams up with Grammy-nominated, chart-topping Nas for a reggae/hip-hop smoke-out!



## DEPARTMENTS

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EDITED BY OAN SKYE

Miss HIGH TIMES 2010 crowned; Wine and weed; Low-CBD pot; Be a Bonghitter; Jewelry for the joint smoker; One-stop pot shopping; Showbuzz; Arrests in California don't add up; Psychosis, pot and the press: The Hemperor lives on; Sean Paul; Rootz Underground; Reggie Watts; Reviews; Brain Damage Control; Band of the Month; Miss HIGH TIMES; Almost Infamous.

### 97 GROWORLD

EDITED BY DANNY OANKO & NICO ESCONOIIO

Pix of the Crop; Cannabis Clinic; Munchies; NORM-Lizer; Freedom Fighter; Dr. Mitch; SSDP Report; Basics of Growroom Electricity; Gear/Hot Products; Dear Danko.

### 134 NEXT MONTH

### 140 POT 40

COVER: DUKE LOBOS STRAIN: JAMAICAN BIG RED  
CENTERFOLD: KENT SEA STRAIN: GUAVA CHEM

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**FEEDBACK**

**HEAVY HARVEST**

I was just getting ready to start an outdoor crop, and I'm a *big* fan of Advanced Nutrients—and then I remembered an article written by Danny Danko a while back, in which he talked about his trip into the Canadian wilderness as well as the use of Heavy Harvest from Advanced. That was a spring trip, and I never checked back into his summer or fall trips to distribute some more nutes. Do you happen to have any information on this article or on Heavy Harvest itself? Is it primarily for guerrilla-style growing, or would it be just as useful in a garden in my front yard? Any information you could share with me would be very valuable. Thanks, and keep up the great work!

*Stephen*

Heavy Harvest is a time-release granular nutrient made specifically for three outdoor applications—the Spring, Summer and Fall formulations all correspond to the needs of the plant during various stages of growth. Advanced Nutrients designed the product for guerrilla gardens that a grower may not be able to reach often, but it works just fine in a yard or greenhouse. It's similar to the Osmocote that you might find in hardware stores, but created with the specific needs of cannabis in mind. Simply sprinkle the granules into the soil or on top of it and then water them in. Periodic rain will slowly release the nutrients until you return with the next application. But be sure to apply the Fall nutes early in the flowering stage to ensure that they're properly flushed out when you harvest.

**IT'S UP TO SCIENCE**

I don't smoke, never have, would like to try, but have one of those jobs that make us tinkle in a cup every so often. So I have one question: I've heard of weed with stripes on it, weed with pink hairs on it, weed with blue hairs on it, and even weed with crystals on it. Given all this effort put into developing so many different strains of weed, why in the world hasn't someone come up with one that police dogs can't smell?

*Charles H.*

**STINK SOLUTION**

I live in Taiwan. I'm writing because a friend of mine sent me a couple of your magazines, and I saw that a lot of people seem to be having trouble with smells. There's a product from Japan that removes all odors in a house. I've never tried it with pot plants, but I'm a smoker, plus I have a Rottweiler, guinea pigs, rats, a snake and a commercial-size coffee roaster in my house. So you might think my house would be a really big stink hole, but I've never had trouble since I've been using it—over six years now. One application lasts for six months; it also kills germs, bacteria, mold, etc. Since it wipes out odors, the pest problem goes away because they can't smell the food. It is called Paini Kemo, and it's completely safe for humans and pets alike. I would like to have someone try it in their secret room to see how well it works in that situation. (I would do it myself, but I



have a family and so nowhere to have my own secret room.) I'd be willing to send you a sample to try if you have any interest.

*Robert*

**BEST OF "BEST OF"**

I'm a longtime reader and big activist in my community, and I would just love to comment on the *Best of #55, Global Grow 2010*. This is one of the best issues of HIGH TIMES I've seen in a long time. "Growing in Won-

derland" was by far the most amazing article I have ever read in HT, so many props to Nico Escondido. "Pot Party Down Under" was just as good: It shows how hard people work to celebrate marijuana, as well as the beauty of it—not to just get high, but because smoking and sharing with close friends is an experience to embrace and remember forever. I would also love to comment on "Trichome Technologies Invades Cuba": I felt more than honored to read that article! Hearing about how he brought all that amazing stuff into Cuba—risking his freedom for potheads everywhere—was quite inspiring and quite moving. I would also like to ask about outdoor growing: I'm a new grower, but I would love some tips on growing outdoors in hot and dry places. Thanks for everything!

*J.P. Cannabis*

**RETURN OF THE JEDI**

Hi! I've read your magazine for many years. I live in the California desert and am a legal MMEC-card person. My first dispensary had Jedi bud—it's the greatest. I soon found that Jedi is available at BC Seeds. I never saw this in your magazine. It was hard to find these seeds, and now they might be bought out by the drug companies.

I support legalizing marijuana and hope to find ways to contribute to this in California. Maybe it will be in your magazine soon about Jedi—it is too cool! (PS: I took your advice and bought those God Bud seeds from BC Bud Depot; they came in a timely fashion, and the Bud Depot people were generous and nice to deal with.) I also loved the Johnny Winter article. All I can say is: Super bravo, HIGH TIMES! Sincerely,

*Mary Crowley*

**THE LOWDOWN ON DOWNLOADS**

I was wondering if I'd be able to save the magazine onto my computer after I pay for the download online, or will I always have to be online to view it?

*Go Getta*

Yes to your first question, *no* to your second—you can save a downloaded copy on your computer to view later whether or not you're online.

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MISS HIGH TIMES



# MISS HIGH TIMES 2010

**A cannabis activist from Colorado takes the crown.**

On April 20<sup>th</sup>, the winner of Miss HIGH TIMES 2010 was announced on the premiere episode of our online radio program *High on The Air*. She's Brittany Wagoner who grew up in Laughlin, NV, but always dreamed of big things. At the age of 19, she arrived in Denver to train to become a medical secretary. But when she encountered the folks from Colorado NORML, her path took a sharp turn into the world of cannabis and her opportunities blossomed.

"I had always smoked," she says. "But I met these people who were so committed and I began to learn about the plant. Then they introduced me to these growers who were just as devoted to the plant."

A year later, Brittany is now part of a six-person medical grow op in the Denver suburbs. She is learning by doing in the 30,000-watt grow room she helps to oversee and deals in all facets of tending plants. Brittany is also a licensed caregiver—interfacing with patients and delivering medicine to those unable to travel.

"Cannabis has changed my life incredibly for the better," she says. "What it has taught me more than anything else is that we need community to achieve things. I couldn't have become Miss HIGH TIMES without a lot of help and support from so many caring people. Sure, I get to wear the crown, but everybody is responsible for it. I'm going to try as hard as I can to change people's minds about cannabis. It's been a positive force in my life—I know it can be for others, too."

*Look for Brittany at future HIGH TIMES events, including the Cannabis Cup in November. Learn how to become a finalist in 2011. Go to [misshightimes.com](http://misshightimes.com) and create a profile!*

Brittany keeps everything thematic in Colorado holding two ounces of legal Snowcap.



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# A Wine & Weed Celebration

A recent visit to a food festival got us thinking: Has anybody ever come up with a way to match particular pot strains with the appropriate wines for a truly cultured buzz? Relying upon the expertise of our friend Ilkka from Finland, we explored our favorites fruits of the vine. Along the way, we even learned about "noble rot wine" (Google it) and discovered that all grapes grown for wine are clone-only. Here-with, our choices of wine and weed for high dining.



## Aperitif

Strain: Chemdog (*indica*-dominant)

Impressions: "Lemony, smells like fuel, licorice (anise), Sour Diesel and Kush flavor. Very strong."

Wine: White Argentinean

2009 Loca Linda Torrontes from La Rioja

Impressions: "Lighter-tasting than it smells, easy to drink, smooth summertime wine, sweet mango and honeydew."

## Main Dish

Strain: Starlight (*sativa*-dominant)

Impressions: "Hazy, sharp and full-flavored, minty, musky, earthy, cedar incense, herbal notes with pine needles, woody and smoky."

Wine: Red Australian

2008 Shiraz from Barossa Valley

Impressions: "Cherries, bright berry fruit, sweet with some tannins, good mouth feel and legs."

## Dessert

Strain: Shiskaberry (*indica*-dominant)

Impressions: "Fruity, cherries, pink lemonade, grapefruit, tannins with hints of chocolate, potent."

Wine: Italian Muscat

2007 Piani di Tufara Moscato di Trani Dolce

Impressions: "Floral, perfumey, rose petals and lilac."



## KUSH GOES BANANAS

Senior Cultivation Editor Danny Danko is giving a shout-out to Banana Kush, a fruity new Kush hybrid that recently rocked his world—soon to be widely available at med-pot dispensaries.



## CONFESS TO JACK!

At the recent THC Expose in Los Angeles, pot-related businesses showcased the newest products available to cannabis consumers and cultivators. But one of Southern California's most prestigious medical marijuana dispensaries used their booth space for something other than merchandising.

The Pharmacy, with locations in West Hollywood, Venice, and Westwood, erected a Cannabis Confessional. Inside, a microphone was installed inside next to a photo of the late Jack Herer. Attendees of the convention were encouraged to enter the confessional and tell the the father of the modern cannabis movement exactly how cannabis has changed their lives. Hundreds spoke from the heart in privacy, including former Miss HIGH TIMES Sarah Newton. The "confessions" will be used in an upcoming tribute to our leader.

Visit [the-farmacy.com](http://the-farmacy.com).



Former Miss HT Sarah Newton confesses.

## LENNON'S STASH DISCOVERED

In Surrey, England, builders who were digging up the lawn of the old home of Beatle legend John Lennon discovered a stash of broken bottles in a leather satchel. Hordes of Beatle fans believe these bottles contained Lennon's hidden cache of LSD.

According to Beatles lore, Lennon buried the acid in his garden in 1967. Why? The Fab Four had announced to the world that they had given up all drugs in favor of practicing Transcendental Meditation.

Apparently, John buried the bottles as a safeguard—just in case he changed his mind and felt like tripping again. The word is that Lennon did go looking for it, but couldn't find it.

Incidentally, the one bottle that survived breakage had a cracked cork and was empty. Fans are already blaming Yoko.

## HIGHLY EFFECTIVE

There are some super new strains available—and guess what? They won't get you high!

You heard us right. Steve DeAngelo, the Executive Director of Harbor-side Health Center in Oakland, CA, one of the state's premier medical marijuana dispensaries, has announced that CBD-rich cannabis varieties have been identified, and are now available to medical patients. (Research shows CBD-rich strains help slow or even reverse a number of different types of cancer, as well as treat other serious illnesses. They also have been useful in treating MS symptoms and traumatic injuries.)

An analytical chemistry lab that DeAngelo helped launch developed these non-psychoactive cannabis strains. Harborside is encouraging growers to cultivate CBD-rich strains like Soma A+ and True Blueberry x OG Kush. Researchers state that patients respond better to low-THC strains with high CBD levels.

DeAngelo states: "Only a small percentage of people enjoy the psycho-activity of cannabis, but almost everybody can benefit from its medical properties. Ultimately, there will be greater demand for CBD-rich cannabis than there is for cannabis that just gets you high."

Great news! But sort of a buzzkill, too...



Take a bow, Stevie D.

# JOIN THE TEAM!



Kim Manning of P-Funk steps up to the plate.

It's hard to believe, but the legendary HIGH TIMES softball team known as the Bonghitters has just begun its 20th season of play. The Bonghitters have always thrived on the high, outside pitch. In fact, the team holds the record for highest team batting average—which is 1.000—because there has never been a Bonghitter who wasn't high when batting. Consequently, the team also holds the record for most consecutive hits.

However, the Bonghitters' overall win-loss record remains a mystery. "We lost track a long time ago," says the current manager. "All I know is, we got a shitload of wins and very few losses."

Celebrate the historic 20th anniversary with the team. Get your official HIGH TIMES Bonghitters baseball shirt today. Available at [hightimes.com](http://hightimes.com).

## THIS MONTH IN SHOWBUZZ



### STINGING REBUKE

Sting has stopped talking about Tantric sex long enough to team up with the Drug Policy Alliance to call for an end to the War on Drugs. In his letter of support, he wrote: "The War on Drugs has failed.

But it's worse than that. It is actively harming our society. Violent crime is thriving in the shadows to which the drug trade has been consigned. People who genuinely need help can't get it. Neither can people who need medical marijuana to treat terrible diseases. We are spending billions, filling up our prisons with non-violent offenders and sacrificing our liberties."

He added: "It's time to step out of our comfort zones, acknowledge the truth and challenge our leaders and ourselves to change."

Good advice, Sting. So how does this need for change square with allegations that you were paid \$1.5 million to \$3 million to play a secret concert for the daughter of Islam Karimov, Uzbekistan's brutal dictator?

"This is blood money, mafia money," stated Uzbek activist and journalist Umida Nivazova. "He might as well have performed in Burma or North Korea."

Sting is a prominent supporter of Amnesty International, which has condemned Islam Karimov for torturing, murdering and enslaving his people.

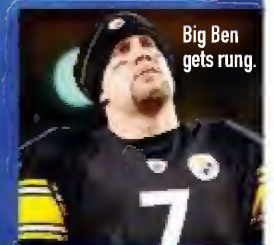
### PIG'S KIN

Obviously, Pittsburgh Steeler quarterback Ben Roethlisberger has a self-control problem.

There are several reported instances in which the 230-pound athlete allegedly forced himself on women. Even though he wasn't charged with a crime in his most recent "encounter," the details of police reports are disturbing. The dude clearly earned the 6-game suspension imposed by the NFL.

But you have to wonder if "NFL" doesn't stand for "No Fucking Logic," because pot and sexual assault are nearly equal in the NFL. Steeler Super Bowl MVP Santonio Holmes (who's now a New York Jet) just received a 4-game suspension for smoking pot. Ricky Williams got a 4-game suspension when he tested positive and was fined \$550,000. He was also suspended for the entire 2006 season using other banned substances related to his holistic medicine studies.

Meanwhile, the league gets rich on beer advertising money and relies heavily on pharmaceutical therapy to keep players on the field.



Big Ben gets rung.

## ONE-STOP POT SHOP

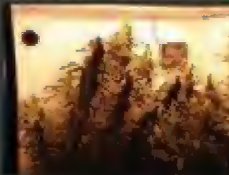
Earlier this year, a 15,000-square-foot warehouse opened its doors to the public. But this ain't Costco, Sam's Club or Wal-Mart—iGrow is a spacious shopping center for cannabis cultivators of every stripe. If you need it, iGrow has it: All the necessary gear for indoor grow ops is here, from nutrients and soil to pumps, tubing, lighting and fans. Shoppers can check out the latest cultivation systems showcased in Ikea-like setups that provide a concrete perspective on growing pot. Plus, iGrow has friendly technicians on staff (a.k.a. the Grow Squad) to answer your questions and point you in the right direction—and, for a fee, they'll also help you build and maintain your own system. There's even a doctor onsite to assist you in acquiring a legal medical recommendation for possessing and cultivating cannabis as a California resident. Located at 70 Hegenberger Loop, Oakland, CA 94621. Visit [igrowoakland.com](http://igrowoakland.com)



## POTCORN PLEASURE

Wonka is back! Once the premier chocolatier in the cannabis industry, with his own line of pot-laced edibles, Wonka decided to shut the doors of his factory over two years ago. Not that he was tired of chocolate—he just got, well, a little nervous, especially after the busts of some other prominent cannabis-candy companies. Since that time, Wonka has been wandering the earth in search of answers. And, apparently, he's found one: *No more chocolate!* But that doesn't mean he's left the kitchen. With dispensaries throughout California requesting that he stock their shelves with scrumptious treats again, Wonka is answering the call, debuting an entirely new cannabis-edibles company this spring called Concentrate. However, this time around, Wonka is working in cold-water taffy and caramel to produce some tasty morsels of medicine not unlike those of the venerable Brach's Candy company. He's also got the Crunky Monkey bar on the horizon, a walnut, banana and toffee delight. But Wonka's outstanding culinary achievement is undoubtedly his signature Potcorn, a bowl of which will sufficiently medicate any patient in need. Visit [pot-corn.com](http://pot-corn.com).

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## POT ARRESTS *HAVEN'T* DECLINED



Friendly pot laws aren't always so friendly.

Despite (or perhaps due to) California's rise as a medical-marijuana Mecca, pot arrests rose to a record-high level in 2008. There were just over 1,000 more felony marijuana arrests in 2008 than in the previous year—17,126 busted in '08 versus 16,124 in '07, according to recently released statistics from the California Department of Justice. Misdemeanor marijuana arrests, which are far more frequent, were also disturbingly on the

rise—from 57,995 in 2007 to 61,366 in '08. These figures represent the highest number of arrests since pot possession was decriminalized in California back in 1976.

Underscoring just how futile this increase is, a recently released study by Jon Gettman of Shenandoah University, "Marijuana Arrests in the U.S. (2007)," documents that the soaring rise in such arrests throughout the nation has had no effect on cannabis-use rates. While pot arrests have literally *doubled* nationwide since 1991, cannabis use (both medicinal and recreational) remains largely unchanged. If anything, cannabis use has *risen*, especially among senior citizens partaking medicinally.

One of Gettman's most disquieting findings is the fact that pot arrests are almost always in the top 10 arrest categories (usually fifth to seventh) in any given state, despite the near-catastrophic budget crises that most state governments currently face. Nowhere is this more significant than in cash-strapped California, where pot busts are rising at an even faster rate than in the rest of the allegedly more "conservative" US.

It should also come as no surprise that these arrest rates are disproportionately higher for minorities. For example, while cannabis use among African-Americans is about 25 percent higher than whites, they are arrested three to five times as often for pot possession. Roughly 60 percent of all pot arrests lead to convictions and, in the case of felonies, incarceration in state prison.—Mark Miller

## PSYCHOTIC JOURNALISM



Last March, the mainstream media once again sought to fan the flames of reefer madness with the assertion that smoking marijuana will drive you crazy.

"Cannabis exposure can double the risk" of mental illnesses such as schizophrenia, the Reuters International news wire declared. The story was based on a new Australian study, which found that "early cannabis use is associated with psychosis-related outcomes in young adults." The United Kingdom's *Independent* newspaper headlined the story this way: "Study finds cannabis use is

'crazy making'"—clearly implying that pot use causes mental disorders.

But little to no evidence exists for these statements. According to California NORML coordinator Dale Gieringer, the rates of schizophrenia—which presently affects about 1 percent of adults worldwide—"have not increased since the 1960s, when marijuana first became popular. Therefore, even if marijuana is a risk factor, it isn't a significant one."

For example, investigators from Britain's Keele University Medical School compared trends in marijuana use and incidences of schizophrenia in the UK from 1996 to 2005. They found that the prevalence and incidence of schizophrenia and psychoses during this period "were either stable or declining," even as cannabis use among the general population was on the rise.

"The expected rise in diagnoses of schizophrenia and psychoses did not occur," the researchers concluded. "This study does not therefore support the specific causal link between cannabis use and incidence of psychotic disorders .... This concurs with other reports indicating that increases in population cannabis use have not been followed by increases in psychotic incidence."

As for the "association" between "early cannabis use" and "psychosis-related outcomes" noted by the Australian research team, there are numerous potential reasons why such a correlation may exist. Among the likeliest: because the symptoms of mental illness often strike early in life, at a time when young people are already experimenting with cannabis. Further, individuals diagnosed with schizophrenia and similar disorders typically use a variety of substances, such as tobacco and alcohol, at higher rates than the general population—indicating that they may be drawn to such intoxicants (cannabis included) after the onset of symptoms as a form of self-medication.

In other words, smoking pot doesn't make you insane. Marijuana prohibition, on the other hand, just might.—Paul Armentano



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Epic Daze party June 19<sup>th</sup>  
The Mezzanine, San Francisco, CA



Jack shows off his signature pipes.



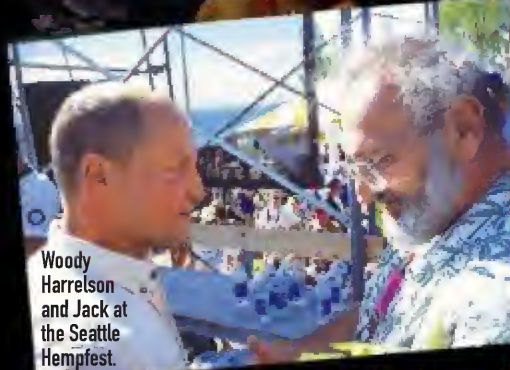
Santa Jack and his elf Tommy Chong.



Jack's affection for cannabis knew no bounds.



Jack spoke at thousands of international rallies.



Woody Harrelson and Jack at the Seattle Hempfest.



Jack shows off his HIGH TIMES heritage.



Jack at 4:20.



The legendary Venice Beach, CA hemp booth.

# THE EMPEROR Lives On!

**On April 15, 2010, Jack Herer passed away. With utter ferocity, he dedicated his life to the cause of legal cannabis—and thereby changed the world. Photos by Dan Skye**

In an old video from about 15 years ago, Jack Herer is leading one of his many legalization rallies at the Los Angeles Federal Building. Tom Hayden, a state senator from California up for re-election, is seen strolling through the crowd, shaking hands and being friendly. Hayden was a fairly notorious '60s "radical" in his own right during the Vietnam War era, but he'd never met anybody like Jack.

Hayden chats with admirers as Jack appears on the periphery; he's stalking the pol, waiting to make his move. Then he springs. There are no pleasantries, just Jack demanding: "What do you know about hemp?"

Hayden, clearly taken aback, tries to formulate an answer. But Jack is on the attack, and he doesn't quit until Hayden has heard him out. This is Jack's truth, and Hayden seems to have concluded that listening is safer than leaving.

Now, that relentless voice has been silenced. But millions heard it. Jack never lived to see cannabis legalized in all its forms, nor did he realize his ultimate goal: to see all marijuana prisoners released from their prison cells. But because of his efforts, we now travel on a superhighway moving swiftly toward a new era of legal cannabis. Jack paved that road.

I first met Jack in 1994, at the inaugural meeting of the Hemp Industries Association. I watched him haranguing the assembled hemp-business owners not to forget the war on pot smokers, urging them to add a strong message pushing for the legalization of cannabis in all its forms and not just focus on the industrial side of the plant. For him, there was no equivocation: one plant, one battle.

Despite his rough exterior, Jack's kindness was well known.

Whether it was educating aimless young people and offering them a chance to participate in his historic campaign to free the weed, or comforting the victims of the Drug War behind bars, Jack's heart was always open.

So was his wallet. The proceeds from his hemp epic, *The Emperor Wears No Clothes*, which lays out the economic, environmental and health benefits that society could reap by embracing the cannabis plant, would ordinarily provide an author with a comfortable income for life. But Jack financed his battles with that cash, and he financed other activists as well. Jack got by selling his book; when he ran out of cash, he sold more copies—with new activists, in turn, being persuaded to join the movement by reading it.

Over the years I photographed the man on countless occasions, stayed at his house a few times, and watched this remarkable individual persuade the world that it would be a far better place with a thriving cannabis economy.

In front of a camera lens, Jack was always playful, always warming to the idea that he could convey something important or new in the photograph. It was always fun.

And make no mistake about it: Jack had fun, too. Let's not forget that. After all, the cannabis plant promotes a sense of fun and gets us closer to our optimum state—sheer happiness.

Thank you, Jack, for showing us the way. 🌿

*Jack's family needs help with his final medical and memorial service expenses. Please donate generously at [jackherermedicalandmemorialfund.org](http://jackherermedicalandmemorialfund.org). PayPal accepted.*



# THMQ

Trans-High Market Quotations (THMQ) reports pot prices by the ounce, strain and location. To submit prices, go to the THMQ link at [hightimes.com](http://hightimes.com).

CURRENT US PRICE INDEX: **\$344** (last month: \$359; YTD: \$358)

CURRENT KIND INDEX (\$350+ PER OZ): **\$405** (\$418, \$426)

CURRENT MIDS INDEX (\$150-\$349 PER OZ): **\$279** (\$281, \$278)

CURRENT SCHWAG INDEX (\$1-\$149 PER OZ): **\$110** (\$95, \$96)

STATE	CITY	STRAIN	PRICE
ALASKA	Kenai Peninsula	Jack Herer	\$320
		Burmese Kush	\$375
		Chocolate Crush	\$300
CALIFORNIA	San Diego	Strawberry Cough	\$250
		White Widow x G-13	\$275
		Purple Bubba Kush	\$350
		Skywalker	\$385
		Hindu Skunk	\$250
COLORADO	Denver	Cheesel	\$350
		G-13 x Haze	\$400
		AK-47	\$300
FLORIDA	Gainesville	Blue Dream	\$400
GEORGIA	Alpharetta	Silver Haze	\$400
HAWAII	Honolulu	White Widow	\$375
		Northern Lights	\$275
		Jack Herer	\$450
KANSAS	Salinas	OG Kush	\$400
LOUISIANA	Baton Rouge	Mr. Nice Guy	\$400
		Purps	\$400
MAINE	Portland	Ice Princess	\$400
MASSACHUSETTS	Boston Springfield	Kush	\$425
		Granddaddy Purps	\$375
		Haze	\$350
MICHIGAN	Roseville	Mendo Purps	\$320
		Northern Lights	\$320
MINNESOTA	Minneapolis	Ice Headband	\$400
			\$400
MONTANA	Missoula	Bubba Kush	\$300
NEW MEXICO	Albuquerque	Green Crack	\$340
NEW YORK	Jamestown	Blueberry	\$325
		Purple Haze	\$400
NORTH CAROLINA	Wilmington	Skunk #1	\$340
OHIO	Cleveland	Death Star	\$450
		East Coast Sour Diesel	\$480
OREGON	Eagle Creek	G-13	\$280
		AK-47	\$260
PENNSYLVANIA	DuBois Pittsburgh Sarver	Mids	\$150
		Trainwreck	\$450
		NYC Diesel	\$500
SOUTH DAKOTA	Sioux City	Mids	\$150
TENNESSEE	Chattanooga	UK Cheese	\$350
		Chemdog	\$400
TEXAS	Dallas	Blueberry	\$400
VIRGINIA	Rockingham County	Master Kush	\$400
		Colorado Gold	\$350
WASHINGTON	Chehalis	Granddaddy Purps	\$350
		MK-Ultra	\$400
		Sweet Tooth	\$450
<b>INTERNATIONAL</b> (prices listed in Canadian dollars):			
CANADA	Edmonton	Juicy Fruit	C\$175
		Purple Haze x Kush	C\$200



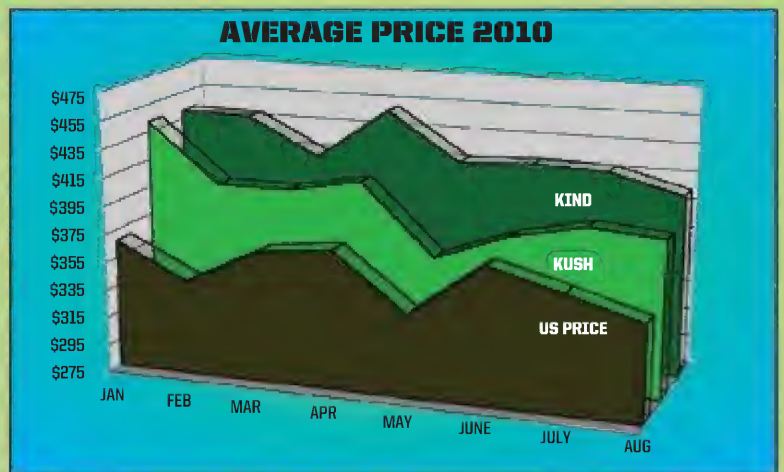
**GREEN CRACK**

## MARKET ANALYSIS

Order was restored this month as Kush reclaimed the top spot from upstart Purps (which placed second). Northern Lights made the top five submitted strains for the first time since March 2009—a 17-month absence. The top five submitted strains (with average price) were Kush (\$387), Purps (\$371), Haze (\$370), Northern Lights (\$324) and Diesel (\$458).

Index Watch: While Mids and Schwag both finished the month above their year-to-date average, US Price and Kind dropped below their previous month's average (US Price, -15; Kind, -13) as well as their year-to-date average (US Price, -14; Kind, -21).

HIGH TIMES wants to know what you're smoking. Submit your strain information, including location and price by the ounce, to [thmq@hightimes.com](mailto:thmq@hightimes.com).



### Hindu Skunk - \$250

Sierra Nevada, CALIFORNIA  
"For the first six weeks after curing, it was impossible to roll a doobie without getting finger hash all over—you know, your standard, run-of-the-mill, stick-to-the-wall California weed."

### Green Crack - \$340

Albuquerque, NEW MEXICO  
"Fat, super-dense, sour, stinking buds engulfed in orange hairs. It is greasy with resin, and the buzz is very relaxing."

### Silver Haze - \$400

Alpharetta, GEORGIA  
"Super-fluffy buds drenched in endless amounts of trichomes. A great head rush and a speedy, talkative high."

### Purps - \$400

Baton Rouge, LOUISIANA  
"When this dankest batch of Purps came around, we were all in a craze since we'd never smelt such a strong Fruity Pebbles scent before. The whole bud is purple while being postured up on light-lime-colored stems."



# IN ONE WORD - BRILLIANT.

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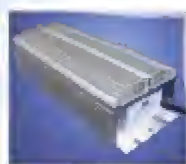
This revolutionary new product joins our stellar lineup of innovative lighting products and like the others, is becoming known the world over as the ultimate in high efficiency and high output.

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**HELPING YOU GROW  
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Dutty Paul doesn't roll 'em small.

Tell us how you got started in the business.

I got started by loving music. I did demos for a few years and small gigs. I went to the recording studios and finally got a real single out in Jamaica off of the *Dutty Rock* album. It was a hit, and the rest was history. Never looked back.

**'It doesn't really matter which strain, as long as the THC content is what my brain is used to—which is a lot'**

What did DJing mean to you in those early years?

Mostly, DJs were my first producers, especially [the sound system] Copper-shot. They would tell me, "Dis is a hot riddim—g'wann, I'll spin it in parties for you." My first-time encouragement, first-time producers were these dudes. I'm not really in the runnings [of Coppershot] officially—I mean, it's my blood, it's my brother, so it is my sound too. Anything they need from me, as far as dub plates or anything else, I've always been there, for sure. The administration is really

those dudes. Sean Aniston is my DJ—we brought Sean on when things got real big with my album *The Trinity*. And my brother Jason has been my DJ for years on tour.

Do you feel that marijuana should be legal?

For sure! In terms of it crowding up prisons with relatively innocent people; in terms of the economic benefits for certain societies, especially Jamaica; in terms of it being utilized for economic and medical purposes—there are so much t'ings that hemp oil, rope and the substance alone can do and can be utilized for by governments. It's kind of funny that more people have been documented to die in accidents, crash and die on alco-

hol, yet that is legal. Michael Jackson died from *legal* drugs; it was illegal to have it where he had it, but still—all those t'ings are made okay by certain standardized governing bodies of medicine.

I think that when people freed it up and decriminalized it in LA, and you could go into a store and buy medical weed, it was a step in a great direction. If it could happen without it changing into a different type of product ... because it *should* be natural—if you do what they do to tobacco in cigarettes with weed, it's going to lose some potency. If you put chemicals in it to keep its potency, it will become a cigarette all over again. It should be legalized in the right way. To me, that is the only issue I foresee with legalization.

What's your favorite strain?

I don't know; I just enjoy the feeling I get from it. People say *indica* or Skunk or this-and-that, but I really like the *feeling* I get. It doesn't really matter which strain, as long as the THC content is what my brain is used to—which is a *lot*.

Weren't you arrested for weed at one point in Sweden? What's the story behind that?

I wasn't arrested—I was detained [at the airport], questioned and released in Sweden. They did tests, which they found nothing, and the authorities sent letters apologizing and stating that I could return anytime I liked.

But I heard a rumor that you're not smoking weed anymore. Is that true?

I stopped *smoking* weed last year for about six months and was eating it—I just wanted a free-up from smoking, as it had been 15 years. I started again after Thanksgiving. It was good to free up the lungs and helped to get me fit, but I'm back on it now.

What are you up to in the studio lately?

I am working on a new album, and I'm also doing some production work of my own. I just did a mix tape called *The Odyssey* with Sean Kingston, Chris Brown, Busta Rhymes, Wayne Marshall and Chi Ching Ching .... You can download it from my twitter timeline, @duttypaul. ✨

# Imperial Blazer

Sean Paul and the natural way. By Brittany Somerset

The national motto of Jamaica is "Out of Many, One People," and no one personifies this better than dancehall superstar Sean Paul. Born in Kingston to a Jamaican mother of Chinese and British heritage and a Jamaican father of Portuguese, Jewish, Indian and Spanish descent, Sean Paul speaks perfect English with a patois that's as thick as a brick. Defying stereotypes, building bridges and blazing new frontiers in music, he has dominated the reggae and hip-hop scenes alike, hitting No. 1 on the *Billboard* charts for both with his second album, *Dutty Rock*, and his fourth and latest album, *Imperial Blaze* (Atlantic). HIGH TIMES sat down with "Dutty Paul" in New York and in Kingston, Jamaica, to discuss his views on music and marijuana.

Feed Your Plants Carbohydrates, L-Aminos And Vitamins,

# And You Get Tastier, More Aromatic, Buds!

Seeing your roomful of huge flowers that smell like candy (maybe like the cotton candy at an amusement park), and then after harvest, savouring the fine taste, aroma and potency of huge amounts of potent, sweet-tasting flowers with your friends is what really makes you happy right?

The smiles on their faces, and them patting you on the back, that's what the good life is all about ... So, what can you do right now to grow the biggest harvests of the most potent, best-tasting flowers?



## Start by Providing Flower-Boosting Energy When Your Plants Most Need It

Getting sweeter, bigger harvests is easy when you give your plants carbohydrates that jolt them with an energy boost.

Remember that during peak bloom cycle your plants' need for sugars exceeds their ability to manufacture them. The more you push them, the more CO<sub>2</sub> and nutrients you give them, the more they need carbs, and the more they fall behind. The resulting carb deficit is the same thing that happens when athletes collapse near the end of grueling competition. And it's why carb-loading is a cherished tactic athletes use to keep going strong for victory, when others fall and fail.



## Sweeter Flowers Are Worth More

Sweeter flowers are yours when you boost your crop's taste, potency and aroma by furnishing anthocyanins, isoflavonoids, polyphenols, isoterpenes and tannins found in cranberry and grape extracts. Growers using these compounds report that a sudden bouquet of pleasant scent arises from their flowers within moments of the compounds being fed to plants in water ... and ... after harvest, you and your friends will enjoy the extra-sweet aroma and taste that your flowers provide (Plus, there'll be more flowers to enjoy too!).

Another technique for upgrading the aroma, taste and value of your crop is to feed vitamins to your plants. For example, Vitamin C stimulates photosynthesis and cell replication while also protecting your plants from negative effects of intense light and heat. To go along with Vitamin C, studies show that feeding your plants B vitamins provides many flower-boosting benefits while also protecting crops from stress.

So how can you get this extensive menu of crop-boosting compounds you've just found out about?

Fortunately, Advanced Nutrients scientists have successfully managed the complex task of sourcing, processing, and combining all these aminos, carbs, and vitamins into Bud Candy so you get bigger, sweeter buds right away.

Best of all, you're getting two products in one because Bud Candy gives you everything in Sweet Leaf and CarboLoad, but it also gives you a lot more in an easy to use formula. Whether your plants are in bloom phase right now, or you're preparing for bloom phase, this is the time to procure 100% organic Bud Candy and get cotton candy taste, fatter buds, and stronger plants.



## Fast Facts

### PRODUCT TYPE:

Bloom Booster, Taste/Aroma Enhancer, Plant Protector

### GARDEN TYPES:

Bud Candy has been specially designed for use with all hydroponics, sphagnum, coco coir and soil growing mediums. Bud Candy has been developed for use with any and all hydroponic, aeroponic, drip irrigation, NFT, flood & drain, drip emitters and continuous liquid feed growing systems.

### WHEN TO USE:

Bloom phase.

### MIXING DIRECTIONS:

Use 2 mL per Liter during weeks 1 through 6 of your flowering phase.

### GROWER EXPERIENCE LEVEL:

Expert, Professional and Grand Master Growers

### DERIVED FROM:

Magnesium Sulfate

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'Smoke goes in, tunes come out.'

Rootz Underground conquer the sinking fortress at Port Royal.

# ROOTZ ROCK REGGAE

Rootz Underground combine styles for a sound that's both fresh and familiar. **By Chris Simunek**

On a bright and scorching morning, I'm assembled with Rootz Underground at Port Royal in Kingston, Jamaica. Back in the late 16th and 17th centuries, this town was the epicenter of pirate life in the Caribbean, and the home base of the infamous Captain Morgan, a few hundred years before he posthumously endorsed a brand of spiced rum.

Not that Rootz Underground has a whole lot in common with the late captain. In fact, this congregation of reggae musicians is an interesting contrast to the stone bunkers and iron cannons of this once-great British garrison that was destroyed by an earthquake back in 1692. (Many will tell you it was God's hand coming down upon the wicked.) Whereas most acts in Jamaica involve a singer and a support band (or tape), Rootz Underground is a group of six players, five of whom are present today: singer Stephen Newland (a.k.a. Stevie G), lead guitarist Charles Lazarus, second guitarist Jeffrey Moss-Solomon, keyboardist Paul Smith (a.k.a. SCUBI) and bassist Colin Young. (The drummer, Leon Campbell, had a rough night and slept in.)

As we all try to keep the smoke from our spliffs out of sight of the security guards at this heritage site, I ask what the word roots means to them.

"To me, it is like a movement based on simpler things," says Jeffrey. "Where it all began—Mother Nature, seeds, the elements. It has a very spiritual connotation: respecting the earth. Respecting each other. Everything come from the same one source. To know where that connection is, where that common factor is, I think we'll run better."

I ask them about marijuana's role in this whole back-to-the-earth worldview, and they laugh and tell me that herb is what fuels the group.

"One time a relative of ours came to our show," Stevie recalls, "and he's not really a ganja man—he doesn't know that much. After the first time he came to see the Rootz Underground, he was like, 'I get it, man: Smoke goes in, tunes come out.'" Stevie laughs. "I mean, we all smoke ganja in a spiritual

way. It is not really a party thing. It is a medicinal and spiritual way—that's how we use ganja. So it's helping us this time to maintain sanity in a crazy world."

Though they've known each other since childhood, Rootz Underground formed as a group in Kingston back in 2000, and their most recent album, *Gravity*, had just hit the stores a few weeks prior to our meeting. I ask them about influences, and beyond the reggae and dancehall that permeate every facet of life in Kingston, Jeffrey also cites a roll call of performers as diverse as the Beatles, Simon and Garfunkel, the Cure, Guns 'n Roses, the Smiths and the Notorious B.I.G.

"And if you take it back to the '80s," Stevie adds, "I could recall some *Purple Rain*."

Their latest video, "Power to the People," is a call to arms for the little man that starts out with a great archival scene: Emperor Haile Selassie I filmed in his palace garden in Addis Ababa, Ethiopia. Staring directly into the camera, the emperor states: "Even in the 20th century, with faith, courage and just cause, David will still beat Goliath."

The obvious question in the 21st century is: Can David still whip the giant today?

"He's currently conquering Goliath," Jeffrey says. "And that is exactly what we represent: how the smaller person, or smaller entity, overcome the bigger, more overwhelming entity. And it's through our pure spiritual power and higher love."

"They try to make you small," Colin adds, "but it is all right to be small. You can be small and very powerful."

"The same way a tiny virus can take you down," I comment.

"Out of nothing came everything," Colin adds, "and will repeat itself. I mean civilizations. I mean, civilizations always repeat. Even the water we drink. Just like you dying, and breaking up, recycling. Nothing is new under the sun. The small always win." ✨



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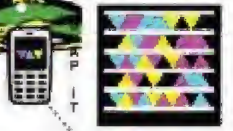
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**'My theory about THC is that it speeds up your thinking process to a point at which you can no longer think, so you just end up being sped up into the moment.'**

Reggie is left holding the bag.

# REGGIE'S RIDE

Mixing music, comedy and a whole lot of cannabis, Reggie Watts charts a path through unknown waters. **By Mary Jane Gibson**

The first time you see Reggie Watts perform, you feel like you're in on something—like you got invited to a really great party where anything can happen. And, according to Watts himself, anything can. "When I perform, I'm about 50 to 60 percent of the time stoned, maybe more sometimes .... I like the feeling—it changes the perspective and puts me in the danger zone, in the moment. Everything I do is improvised, so I really rely on that high uncertainty to connect to that creative flow."

Watts is a multidisciplinary performer, with music, theater and comedy credits—including the Andy Kaufman Award—to his name. He grew up in Montana and then moved to Seattle, where he played in "all these bands ... Hit Explosion, this '70s cover band; punk, heavy metal, African *soukous* music, and then I was in Maktub—we released five albums and were together 10 years."

He made the leap from full-time musician and singer to fledgling comedian after the music bubble popped in the late '90s. "I just didn't see how I was going to make a living at music," Watts recalls. "Everyone was struggling. I always loved doing drama and comedy and improv, and I realized that comedy is a really fun thing for me. I got hooked up with Eugene Mirman ... I went out to New York and performed, and people dug it. And that was it—I knew *that's* what I should be doing. I still get to do theater, and I still get to jam—but

because it's comedy, I can do a lot more than if I was just a musician."

Watts's comedy is an improvised stream of consciousness layered over beats and a musical landscape that he builds and loops using a Line 6 DL4. He may take you anywhere—from sick beats and hip-hop hilarity (watch his "Fuck Shit Stack" on [vimeo.com](http://vimeo.com)) to far-out extraterrestrial landscapes where there's some really weird alien sex going on. At his HIGH TIMES interview, he partook in some delicious Chemdog from a vaporizer before performing for the assembled few. He rhapsodized: "My theory about THC is that it speeds up your thinking process to a point at which you can no longer think, so you just end up being sped up into the moment, you're constantly in the moment ... and you accept it: There's that beautiful moment that you exist in. It's important for me in creating work."

Reggie's first time getting high was at age 16, living in Montana. "I was in the back of a lime-green Monte Carlo with my friend Beave. I didn't get stoned the first time; it took two more times, and then finally ... it hit me while I was on the bed next to a Costa Rican exchange student that I had to hang onto because I thought the bed was tilting and I was going to fall off. It was pretty awesome—it was a very surreal experience. And that night, I had my first kiss."

His preferred method of ingestion has evolved over the years. "It used to be smoking ... but then I started eating it exclusively these past three years. When I was in Edinburgh, I would get hash and just nibble it, and it would get me totally high. If I have weed, I just take a square of butter and sauté it on low heat, sop it up with a corner of bread. Space cakes, breath strips—there are so many options. I love eating—I love the intense body high, I love feeling annihilated. I think of it as weight training, like they put resistance on you when you're running ... it's my form of training."

You can catch Watts on tour opening for Conan O'Brien, and he has also a DVD/CD package, *Why Shit So Crazy?*, available May 18 from Comedy Central Records. You're in for a treat—just be sure you have some kind nugs on hand to go along on the ride with him. ✨

Visit [ReggieWatts.com](http://ReggieWatts.com) for tour dates.

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# HAVE A NICE REDUX

It's hard to believe it's hip nowadays to look like a *Tea for the Tillerman*-era Cat Stevens, but the evidence is irrefutable. Take a stroll down Bedford Avenue in Brooklyn or the Lower East Side in Manhattan, and you'll see kids everywhere in expensive vintage clothes, pricy classic sneakers and scraggly beards. The '70s are back. Again.

So maybe that explains the slate of releases and reissues from that oddball decade that have come across my desk recently. To start, there's Iggy and the Stooges' *Raw Power Legacy Edition* (Sony). Timed to coincide with their induction into the Rock 'n' Roll Hall of Fame, Sony regurgitates the oft-maligned original David Bowie mix of this proto-punk classic. I think the fact that this is one of the worst-produced albums of all time, while at the same time being one of the most influential, speaks for itself. It still sounds like a monkey barking at a vacuum cleaner, but *damn* that monkey is good. For Stooageophiles, there's an unreleased soundboard show from Atlanta that's a bit murky and unbalanced at times, but Ig entertains throughout.

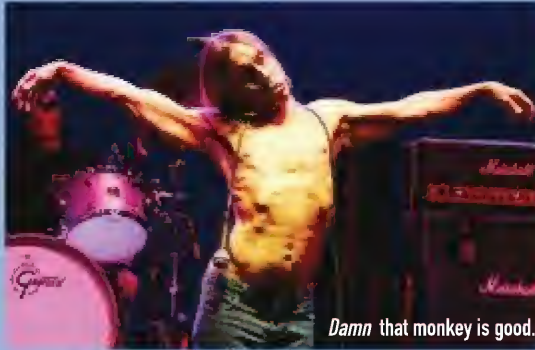
To me, Frank Zappa and the Grateful Dead always had one thing in common: Their music never lived up to their album covers. Even so, there's been a steady stream of unreleased live shows from both in the last few years, Zappa's *Philly '76* (Vaultalternative) and the Dead's *Road Trips Vol. 3 No. 2 Austin 11/15/71* (Grateful Dead) being the most recent at the time of publication. The Zappa thing is awful—a tiresome bludgeon-

ing of Frank's mid-'70s retard funk. It's hard to imagine a performer who could hate his audience enough to pen a song like "Stink Foot." The Dead set, though, is pretty nice, especially if you get the edition with the bonus disc. It doesn't get too lethargic like Dead shows from later years, and they stretch out into some cool spaces on "Dark Star" and the bonus disc's "The Other One."

Fast-forward to the end of the decade, and there's a slate of reissues from the great Buzzcocks—*Another Music in a Different Kitchen*, *Love Bites* and *A Different Kind of Tension*—each with a disc and a half's worth of bonus tracks. Contemporaries of the Sex

Pistols and the Clash, the Buzzcocks were arguably the first punk band to write actual love songs, as well as the originators of that poppy-punk sound that saturates the airwaves these days. If you like Green Day, check these discs out and see where it came from.

Finally, I've been sent a book: *New York in the 70s* by Allan Tannenbaum, onetime photographer for the *Soho News*. As Gotham collapsed financially, socially and physically throughout the decade, its no-holds-barred art and party scene exploded. Tannenbaum covers everything from the politicians of the day to the Soho art scene, Studio 54, CBGB's, gay-pride parades, sex parties, you name it. Despite the fact that most of the book is in black-and-white and the '70s were definitely a color decade, this is an essential document of a gone-but-not-forgotten era. It almost makes you want to grow a beard and pretend you're there.—Chris Simunek



## SWEET APPLE

*Love & Desperation*  
(Tee Pee Records)



Sometimes it's all about the company you keep. Though John Petkovic made his mark leading the grimy '80s Cleveland post-punks Death of Samantha and the garage-glam Cobra Verde (who backed Robert Pollard in *Guided by Voices* in the late '90s), he's never been accorded the attention he deserves. Two years ago, when his mom died, a distraught Petkovic jumped in his car and drove. He'd covered nearly 400 miles when he called Dave Sweetapple in Vermont, who told him to come on over and invited Witch bandmate/drummer J. Mascis to join them. Thus was *Sweet Apple* born, prompting significant buzz thanks to Mascis's participation.

Though consistent with Cobra Verde, the template of their debut is broader and rocks as vigorously as anything Petkovic's released. It's peculiarly catchy in a sideburn-sporting, '70s riff-ravering manner while shaped by '80s alt-rock concision: Almost every song stops short of three and a half minutes, never outstaying its welcome and giving the album a propulsive energy. It never feels unfocused either, though the sounds range from Foo Fighter-style anthems ("Do You Remember") to chunky Vanilla Fudge blues-psych ("Flying Up a Mountain"), infectious Dolls'd-up glam ("Somebody Else's Problem"), Deep Purplish grooves ("Never Came") and ringing '80s college rock ("Goodnight"). Petkovic's gruff croon meshes well with the music's ragged guitar-heavy swagger, and while there's a consistency to the overall tone, each song finds a different way to express itself. The result is a nonstop party album (ironic given its genesis) that reveals more with every toke.—Chris Parker



## PERDITION

*Perdition EP*  
(Distort Reality)



It's hard to believe that half the members of NYC's Perdition are total stoners, because these noise punks unleash some of the most whiplash-brutal D-beat hardcore I've ever heard from a modern US band. Borrowing speed and sound from seminal early-'80s Scandinavian thrashers Terveet Kädet, Shitlickers and Asta Kask as well as the UK legends Discharge, Perdition rage into 2010 with totally pissed-off vocals that are slightly gruffer than those of their European predecessors, though no less raw, and an absolutely destructive rhythm section. (Listen to the bass on "Room 101" or the drums at the beginning of "Cold Darkness"—devastating!)

There are loads of good US bands mining this vein right now—Portland, OR's Nerveskade; Columbus, OH's Nukkehammer; El Monte, CA's Mundo Muerto, to name just a few—but I honestly think Perdition out-rips them all. One reason this EP stands out is the production—recorded, this breed of hardcore often sounds thin or tinny, as the guitars and vocals get smashed together and the bass gets dropped entirely; here, the guitar comes through with tremendous crunch and the bass is thunderous, all without sounding too clean. There are a couple slightly cheesy touches I could've done without (the crack of a beer can opening, the sound of the singer barfing or possibly recovering from being choked to death), but those are minor complaints swept aside by the hurricane of explosive energy emanating from this six-song slab of vinyl. Sweet cover art, too. Get this!—Polly Watson



## JOHN WATERS

*Role Models*  
(Farrar, Straus & Giroux)



Filmmaker, writer, artist and incorrigible bad influence John Waters is a great American original, one who's always understood that authentic stardom requires allegiance to one's eccentricities. In his new book, he pays tribute to his "role models," a madly eclectic cast of stars and iconoclasts who've influenced him—from a Pulitzer Prize winner to the street characters of his native Baltimore. Waters has never been comfortable being limited to one label, preferring "minorities who can't even fit in with their own minorities."

An unabashed fan—as in *fanatic*—Waters gushes about singer Johnny Mathis, playwright Tennessee Williams, fashion designer Rei Kawakubo, rocker Little Richard and artist Mike Kelley, but he also celebrates lesbian Republican stripper Lady Zorro (whose story is told by her amazingly well-adjusted daughter) and Marine gay-porn auteur Bobby Garcia. In a particularly poignant chapter, he makes the case that his friend, former Manson girl Leslie Van Houten, has been rehabilitated and deserves parole 41 years after helping in the murder of Leno and Rosemary LaBianca.

Waters is a thoroughgoing journalist and a devotee of detail; you'll learn the location of *Wizard of Oz* Wicked Witch Margaret Hamilton's summerhouse, among thousands of other facts. He's also the ultimate nonconformist, and even in the final chapter (where he advises the reader on how to become a cult leader), what he's really suggesting is that people think for themselves, no matter how outrageous those thoughts may be.—Michael Simmons

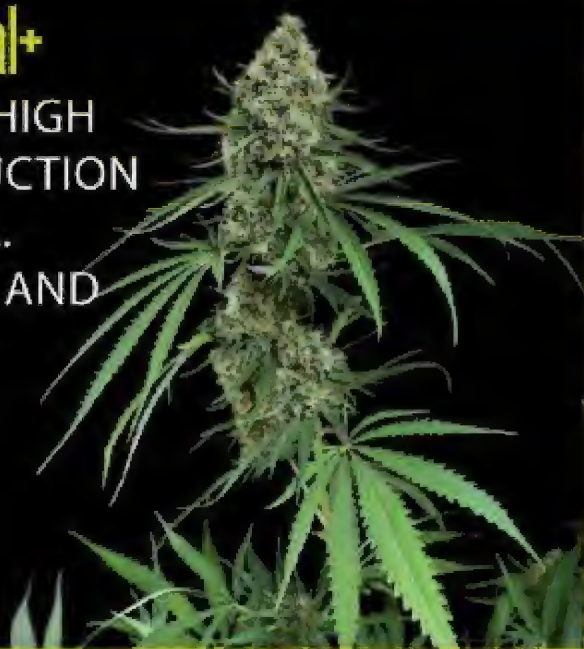


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# WAL-MART HIPPIES ON THE MARCH

Could the Tea Party crowd be the evil spawn of '60s radicals?

By Paul Krassner

First, *Los Angeles Times* columnist Gregory Rodriguez wrote: "The excesses of the '60s gave rise to a conservative counterrevolution. Abbie Hoffman begat Ronald Reagan ...." Next, *New York Times* columnist Frank Rich wrote that Connecticut millionaire Ned Lamont—then challenging Joe Lieberman for his Senate seat—wasn't "easily slimed as a reincarnation of Abbie Hoffman or an ally of Osama bin Laden." (Strange bedfellows? After all, bin Laden plotted to crash an airplane into the Pentagon; Hoffman merely wanted to levitate it.)

Now Abbie has been coupled with another cartoon character, Glenn Beck, that media monument to manic depression and mean-spirited disinformation (and the author of *Common Sense*, which rips off a far better book on the same subject by Thomas Paine). On Salon.com, Michael Lind declared that the "tea partiers are the hippies of our time. In Glenn Beck, the countercultural right has found its own Abbie Hoffman." Expanding on that theme, *New York Times* columnist David Brooks wrote: "There are many differences between the New Left and the Tea Partiers ... One went to Woodstock, the other is more likely to go to Wal-Mart." But, he added, "the similarities are more striking than the differences."

Fortunately, to the rescue of truth comes Alexander Zaitchik, a former editor at the *New York Press* and the author of *Common Nonsense: Glenn Beck and the Triumph of Ignorance*. "The Tea Party that worships Sarah Palin and screams for Barack Obama's birth certificate" hardly merits comparison to the positive social movements of the 1960s, he writes on Alternet. "The Tea Partiers, it is becoming fashionable to argue, are the heirs not just of the John Birch Society and the young Barry Goldwater, but also of Students for a Democratic Society and the young Abbie Hoffman.

"If this analogy smells suspect, it's for good reason ... the differences between Woodstock and Wal-Mart are not exactly minor. There is a vast and defining gulf separating the acts of screwing in the mud on acid, and bargain shopping for a new plasma screen on which to watch Fox News. Brooks is clearly proud of his term 'Wal-Mart Hippies' ... but the phrase is oxymoronic. There is little meaningful commonality



Glenn Beck puts on his game face.

**Glenn Beck is a media monument to manic depression and mean-spirited disinfo.**

between a youth movement based on the quest for authenticity, beauty and release, and a largely geriatric one based on anger, ignorance and fear."

Zaitchik asked me for a comment to include in his article. I wrote: "Whereas the Yuppies saw through the propaganda machine, the Teabaggers are soaked in it. We were active in a time of abundance, they are active in a time of economic catastrophe; so we fought villains and they fight scapegoats. Abbie Hoffman was a seeker of justice; Glenn Beck rationalizes injustice. Abbie was hysterically funny; he made people laugh and think simultaneously. Beck promulgates hysteria; he exploits the fear that he helps create. To link Hoffman and Beck as part of the same tradition is '60s bashing at worst, and sloppy journalism at best."

I neglected to mention that Beck is a raving, unconfined nut (exactly what the FBI once called me). His function on Fox News is to make Bill O'Reilly look sane. "It takes the heat off me," O'Reilly once admitted. "I tell him, 'Be as crazy as you want.'" But, to be fair and balanced, I have to confess that Abbie and I, like Beck, each experienced our own peculiar paranoid freak-out.

In my psychotic episode, I convinced myself that the man sitting in front of me on a bus was a CIA operative. I had to let him know that I was onto his game. I took out my ballpoint pen, clicking the button again and again as if it were a telegraph key and repeatedly saying, "Paul Krassner calling Abbie Hoffman," just loud enough for the CIA guy to hear.

Meanwhile, Abbie was on the lam and using a false identity, but he once started screaming "I'm Abbie Hoffman!" over and over in a Las Vegas hotel room, where that sort of thing isn't unusual. In time, I told Abbie about the bus incident. "Oh, yeah, I got your call," he said, "only it was collect, so I couldn't accept it." ✨

*The full story behind Krassner losing his mind is included in the expanded edition of his autobiography, Confessions of a Raving, Unconfined Nut: Misadventures in the Counterculture, available at paulkrassner.com.*

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GBB have spent the last five years cultivating their fan base by relentlessly playing small shows up and down the Shenandoah Valley. The band was formed in 2005 by a group of childhood friends: Rick Batka (guitar and lead vocals), Willy Matthews (acoustic guitar), Cameron Gorman (bass), and brothers Alex Kerns (electric guitar) and Riley Kerns (percussion). They're currently touring in support of their five-track EP, *Aren't We All?*, a solid follow-up to their full-length debut, *Welcome*. Every track shows off the GBB's glorious melody shifts and danceable grooves, while repeat listenings uncover new and intricate patterns in each piece. One of the EP's highlights is "Hey, Mister," a scathing critique of our national drug policy. The stoner-friendly song could be one of the reasons why the Golden Butter Band have been invited to perform at two marijuana marches in Washington, DC, which is currently figuring out how to implement its medical-marijuana program.

For more information, including tour dates and audio downloads, check out [hightimes.com/thegoldenbutterband](http://hightimes.com/thegoldenbutterband).

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PROFILE: jadoretheherb  
OCCUPATION: Student  
CITY: Santa Cruz, CA



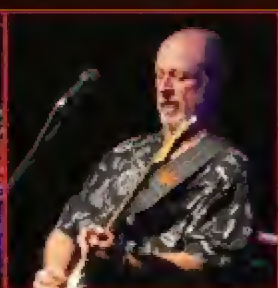
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BY BOBBY BLACK

## FEAT IN THE SAND

Breezes Resort lives up to its name at the eighth annual Feat Fan Excursion in Negril.



Left to right: Putting the "jam" in Jamaica; singer Paul Barrera with pot-leaf guitar strap; guitarist Fred Tackett at West Haven orphanage.

In all the times I'd been to Jamaica and made that long trip from Montego Bay into Negril, I'd always driven right past the larger, more expensive resorts and stayed at one of the more modest spots down on Seven-Mile Beach. That is, until this March, when CS Travel sent my fiancée Vegas down to work the annual Feat Fan Excursion at the all-inclusive Breezes Grand Resort and invited me to tag along.

Jamband pioneers Little Feat have been entertaining audiences with their Southern-fried boogie rock for over 40 years, but have only been hosting these tropical-concert getaways here since 2003. Formerly known as the Grand Lido, this award-winning establishment was taken over by the Breezes Resorts chain in November 2009, instantly becoming its flagship destination. With its seaside stage, four restaurants, three hot tubs, five bars and full spa, this "superclub" is the epitome of laid-back luxury and a heaven for hippies and heads.

Our first priority after settling in was scoring some smoke. By sunset, our man-on-the-scene J.C. had hooked us up with a nice, dried stalk of local ganja that he called the Mango. We picked up a crude wooden pipe and a small chunk of finger hash from the Rasta merchant on the beach and fired it up. After a few bowls and a half-dozen dirty bananas, I and I were feeling mighty irie. Unfortunately, the weather wasn't quite as calm—as the night progressed, the wind got stronger and stronger. When they said Breezes had taken over this place, they weren't kidding.

It was a busy but mellow weekend for Vegas and me. We began each morning working at the hospitality desk in the lobby—chatting with fans, directing them to the day's activities (which included tie-dyeing, a golf tournament, mixology classes and an amateur-hour jam session) and eventually signing them up for next year's fest. In the evenings, we enjoyed scrumptious meals of salad, seafood and steak, then puffed down on the righteous herb and danced in the sand. Blues-guitar icon Taj Mahal got us warmed up with his soulful, stripped-down sound, and the Feat got the audience movin' and groovin' with fan favorites like "Let It Roll," "Dixie Chicken" and "Willin'." After the performances, we ended each night with some jerk chicken and Red Stripes down at the Far Bar.

We met lots of fun and interesting people over the course of the weekend, including a

lovely woman named Elana Himmelfarb who runs the Feat Camp Donations Drive. Each year, she collects donations from Feat fans at the event for various schools and orphanages in Jamaica, including the West Haven Children's Home for the Disabled. The band and their followers are known for their philanthropy, and this year was no exception—over the course of the trip, Elana collected around \$660 worth of cash and supplies for the needy orphans. Guitarist Fred Tackett even takes time out himself to visit and play for the kids.

Then there was that hippie lady who offered us a piece of what she called "ganja spice cake"—which we later learned (only after eating it) was actually *mushroom* cake. Luckily, by the time it kicked in, we were done with our shift and settling in for our seaside-sunset couples' massages.

Unfortunately, the uncharacteristically cool temperatures and fierce winds made enjoying the beach a bit difficult, and the choppy currents forced the resort to cancel all water activities. In fact, the tide washed up so much algae that the club needed a bulldozer to dispose of it all. But despite all the seaweed and sandstorms, the irie vibes flowed on undeterred.

Feat's grand finale on Sunday night was preceded by a lavish gala out on the lawn adjacent to the beach. Fortunately, Jah finally took pity on us and ceased his blustery fury just in time for the banquet. After feasting on lobster tails and a decadent dessert buffet, Vegas and I headed back to our suite with the last of the Mango to enjoy some well-deserved relaxation time in our Jacuzzi.

Of course, we weren't the only ones enjoying the island's herbal refreshments that evening; rumor has it that while the band was covering the stoner classic "Don't Bogart That Joint," someone in the crowd passed one up to the stage, and vocalist Paul Barrera took a hit and passed it around. Of course, like any good journalist, I needed to verify this report before I could put it in print. But when I posted a question about the alleged tokage on the band's Facebook page, they replied simply: "Sorry, Bobby—what happens in Jamaica ... stays in Jamaica, mon!"

Hoy-Hoy!

For info on next year's Featfest, email [LittleFeat@CSTravel.org](mailto:LittleFeat@CSTravel.org) or go to [littlefeat.net](http://littlefeat.net).

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A longtime Hawaii resident travels in search of the famous island's elusive pakalolo growers, who produce some of the best buds in the world.  
Story & photos by South Bay Ray

# THE MAGICAL IS

The natural beauty of Maui has turned casual visitors into lifelong residents for years.

# LAND OF MAUI

## WOWIE MAUI

It's only a half-hour flight from Hilo on the Big Island of Hawaii to Kahului, Maui. Taped to the inside of my underpants was a package of joints I had rolled for my three-day stay on Maui, so I was understandably nervous. Unlike other states with medical-marijuana laws, here I'm not able to take my medicine with me from county to county; the only way to go is by air, and that's controlled by the Feds. One man was recently busted at the airport even with his medical card—and though he didn't do any jail time, he's still on probation, and the lawyer cost him \$2,500.

As the plane descended and approached the runway, I could see the sugarcane fields below, and to the right loomed Haleakala (House of the Sun), the massive shield volcano that makes up about 75 percent of the island. I was reminded of my first visit to Maui back in the late '60s. Some friends and I had rented a car and driven to the top of Haleakala. It was late, so we decided to spend the night in the observation building—at that time, an empty round structure with glass windows. No one was there, and the place was unlocked, and we had air mattresses and sleeping bags. About 5 a.m., my friend Snowman gently woke me and said, "Open your mouth." He placed a tab of LSD on my tongue; then we got dressed as warmly as we could and went outside to sit against the building, looking in the direction of the rising sun. I can still see a vivid picture in my mind of the glorious sunrise that morning. From that day until now, Maui has always seemed like a magical place.

Golden Nugget, cured and ready to smoke.

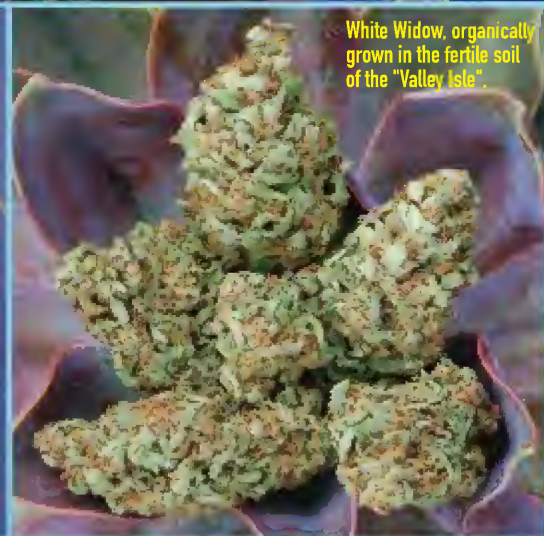
You don't need acid to find the magic here. Maui is known for its 70 miles of white-sand beaches, surfing, scuba and skin diving, windsurfing, avocados, onions, humpback whales, *paniolo* cowboys, hula, pineapple, sugarcane, traditional and contemporary Hawaiian music, yoga and meditation classes and retreats, waterfalls, beautiful sunsets, protea flowers, friendly people and, of course, the awesome strains of *pakalolo* (pot).



God Bud from BC Bud Depot surrounded by local orchids.



A male flower can be seen in the middle of this hermaphroditic bud.



White Widow, organically grown in the fertile soil of the "Valley Isle".



Biglar's backyard buds grow in the lush sunshine of Maui's hills.

## IN SEARCH OF PAKALOLO

The car-rental place gave me a free upgrade to a brand-new cream-colored Cadillac. Awesome! I'm really styling now! I headed to Charley's Restaurant in Paia to have breakfast. It's just a few blocks from some of the best surf on the island at Ho'okipa State Beach Park.

After a nap at the Beach House, I visited Biglar, a *pakalolo* grower who lives nearby in an upscale neighborhood. He's not a textbook grower, but he's retired, intelligent and creative. Biglar has worked out his own system that's been very successful, and his medical license allows him to grow seven plants. He buys clones from a young man (dubbed Clonemaster) for \$21 each. They come in six-inch pots, and they're about eight to 12 inches tall and bushy. All he has to do is call Clonemaster, who brings them right over to Biglar's house. Home clone delivery—very cool! Clonemaster is an excellent breeder, and Biglar has gotten as many as 14 different strains from him. Some of the strains are traditional, like White Widow, but others are his own creations, with a variety of catchy names.

## ISLAND GROWING

Maui has been in the forefront of growing since the late '60s/early '70s. Nicholas Schou, in his book *Orange Sunshine*, recalled that in 1970, members of the Brotherhood of Eternal Love sailed to Maui in a "seventy-five-foot yacht loaded with six thousand pounds of Mexican pot—the cultivars of which would become the legendary Maui Wowie—and arrived in the tropics like conquering warriors in a royal canoe." Clonemaster is carrying on their tradition, along with hundreds of other indoor and outdoor growers and breeders on Maui. In the last 40 years, Maui has produced many of the finest buds known to humankind. I've read and heard that clones from Maui have been smuggled to Canada, the Netherlands and the mainland US, to be used in breeding projects that have created many other powerful strains.

## BIGLAR'S UNIQUE GROWING SYSTEM

Biglar puts his clones under fluorescent lights in his closet at night, while in the daytime he takes them out to his backyard. So they get virtually 24 hours of light every day (12 hours natural and 12 hours fluorescent). This goes on for about two weeks, and then Biglar transplants the clones into one-gallon pots, continuing the same routine for another month or so, at which time he transplants them again into two-gallon pots. He uses a mixture of Miracle-Gro potting soil and dirt from his backyard. The plants are kept in the two-gallon pots and continue the indoor/outdoor routine for a month or so, until they get three or four feet tall. At that point, they're transplanted into the ground in his backyard. The plants are fed with FoxFarm's Happy Frog Fruit and Flower (5-8-4) during the vegetative indoor/outdoor stage and General Organics' BioThrive Bloom (2-4-4) once he plants them in the ground outside.

Within about eight days, the plants start to flower. This system enables Biglar to harvest three to four ounces per plant. One amazing thing is that his neighbors can see his plants easily from their yards, but they totally accept and protect his plants and respect his need for medicine. His only problem is that sometimes a small worm will bore into a stem, killing the surrounding leaves and buds.

After having a great time with Biglar, I headed to Ho'okipa Beach Park. I was *stoned!* The sea breeze filled my nostrils with the fresh fragrance of the ocean. The sun was doing magnificent things through the clouds. The ocean was a deep blue all the way to the horizon. Surfers were ripping wave after wave. In the distance, I could see the island of Moloka'i. I was really feeling the magic of Maui.

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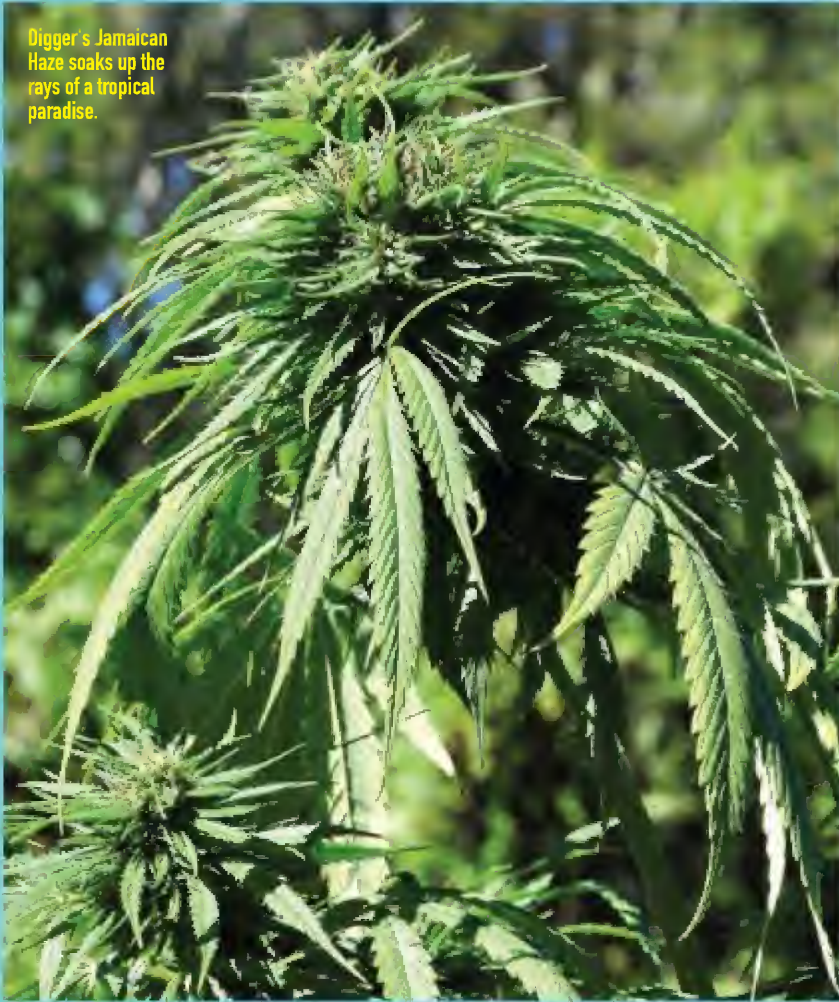
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## HAWAII'S MEDICAL MARIJUANA

Digger and his wife have medical-marijuana ID cards that allow them to smoke marijuana on private property and grow a total of 14 plants, but they can't buy seeds, clones or dried buds unless they do it illegally. Though Hawaii approved medical marijuana 10 years ago and was the first state to do so legislatively (states like California did it earlier, but through ballot measures), its medical-marijuana laws haven't changed since. But it now appears that change is finally in the making.

On March 2, 2010, the Hawaii State Senate overwhelmingly approved three separate and much-needed marijuana-law reform measures and sent them to the House for further consideration. Once again, Maui County led the way—State Senator Kalani English, a Democrat who represents East Maui, Lanai and Molokai, was quoted as saying: "We've already legalized medical marijuana, and now we have to allow for humane access to it. Our attitudes have changed in the last 10 years. Hawaii is a live-and-let-live state. If it doesn't harm anyone else, what you do is up to you."

The first bill would allow counties to license marijuana dispensaries. The second bill increases the number of plants that patients are allowed to have from seven to 10, and the number of dried ounces from three to five; it also would increase the number of patients that a single caregiver can serve from one to four. The third bill decriminalizes the possession of up to one ounce of weed. There would be no criminal penalties, but offenders face a civil fine not to exceed \$300 for the first offense and \$500 for every violation thereafter.

One provision contained in the bills has been getting the legislature's attention: The state would tax marijuana sales at \$30 an ounce—a move that could generate as much as \$50 million in annual revenue for the state, which is currently facing a \$1.2 billion budget deficit. But even if the bills make it through the legislature, it's unlikely that Republican Governor Linda Lingle will sign them into law—nor is it clear that there are enough votes to override her veto. Even so, it's a great victory for the many people who have worked hard to make these changes, and for the many people who have suffered because of the current laws. One thing is clear: Change is in the air, and it's only a matter of time before we reap the benefits.



Diesel clones waiting for their turn to flourish and flower.

## DIGGER'S DANK

The next day, I visited Digger, an old friend who's been growing pot since 1967. We caught up on a few things and delved deeply into our favorite subject, marijuana. Digger grows some great weed, and to prove it he brought out a large bag of nicely trimmed buds. We exchanged ideas and shared what we'd been learning lately. After all, a grower never stops learning.

Digger germinates his seeds in tap water that's been sitting out for a couple of days so the chemical additives can evaporate. The seeds are left in the water until a small white root just starts to protrude. Then they're planted into a flat of soil and given some B1

starting solution. Once they form true leaves, Digger uses Miracle-Gro Quick Start (4-12-4) for the seedling stage.

After a few weeks, he transplants them into large 10- to 20-gallon containers in his backyard. The soil mix is three parts Pro-Mix BX, two parts Fox-Farm Ocean Forest potting soil, and one part Greensand (0-0-3). He feeds them with Alaska Fish Emulsion (5-1-1) during the vegetative stage and Fox-Farm Tiger Bloom (2-8-4) during the flowering stage, then finishes them off with Fox-Farm Big Bloom (0.01-0.3-0.7). We checked out some beautiful six-foot-tall Jamaican Haze plants that were blending in nicely with the tropical foliage.

A closeup of Diesel reveals many glandular trichomes filled with truly "essential" oils.



## SNOWMAN'S DIESEL

From Digger's house, I headed down the road a couple miles to see my friend Snowman. (That's right—the same guy who popped that acid in my mouth and watched the sunrise with me atop Haleakala some 40 years ago.) He greeted me with a big smile and his friend's Diesel buds—more evidence that there are many high-quality clones of various strains being produced here on Maui. As Snowman helped me take some photos of the Diesel, we smoked, laughed a lot and genuinely enjoyed our time together.

That evening, I attended a performance by my eight-year-old granddaughter's hula group at the Maui Arts and Cultural Center Auditorium. After the performance, I stood at the entrance of the outdoor stage and watched the Wailers, who were putting on a concert at the same time as the hula show.

My three days on Maui were packed with magical experiences that will always be precious to me. There's a lot more I could share, but I'll just leave it at this: Everyone should experience the beauty and bounty of Hawaii at least once in their lives. ✨



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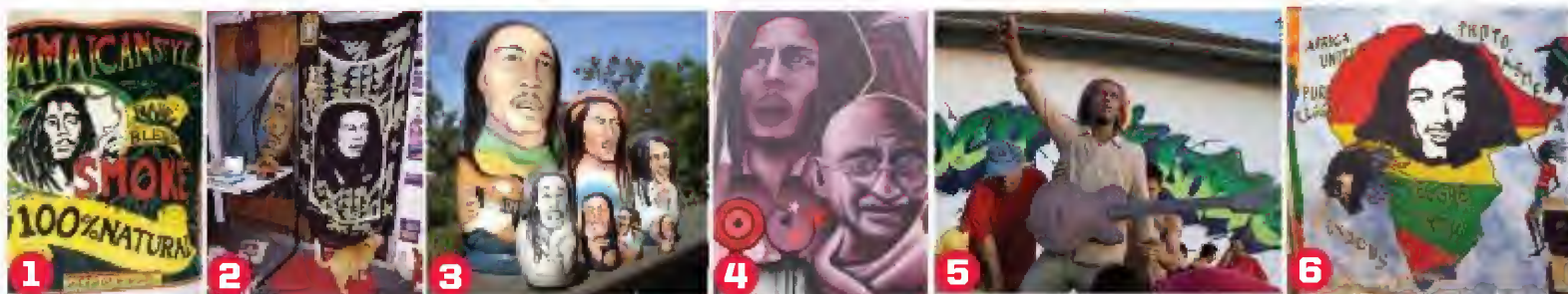
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# BOB MARLEY'S INTERNATIONAL IMPACT



Bob Marley once famously said that reggae would just “get bigger and bigger” until it was embraced by all the righteous people for whom it was intended. He may just as easily have been speaking about himself, because today, from the Balkans to Brazil, from the bottom of the Grand Canyon to the frozen heights of the Himalayas, Marley is widely respected for his unyielding stance in favor of the conscious use of herb to inspire divine communication. His reggae rhythms have provided the foundation for revolutionary lyrics in scores of languages—even, at times, with opposing forces. Almost 30 years after his untimely death, Bob Marley has become the best-known singer in the world. Here’s a brief survey of his burgeoning influence on every corner of the planet. **By Roger Steffens**

## NICARAGUA & PERU

Dr. Gayle McGarrity, an old friend of Bob’s, recalls visiting Nicaragua during the civil war in the 1980s. In a remote northeastern area, she met a contra guerrilla leader who was fighting against the Sandinistas. “Some of his men came in with a CD player, and they were playing Bob’s songs,” she says. The dreadlocked leader told her that they opposed the Sandinistas because “they didn’t believe in God and they were Communists and they were trying to destroy black culture and Indian culture. That’s what they were fighting for, and that’s what Bob Marley was all about. And Bob had nothing to do with the kind of Marxist totalitarianism regime that was trying to impose itself on the coast. And I remember thinking, ‘Wow, now this is challenging my political correctness totally.’ And then I once saw a truck with young Sandinista recruits going out to fight, and a particular song they were playing caught my attention. It was ‘Crazy Baldheads,’ because they were all laughing and singing it out loud—‘Revolution’ and ‘Crazy Baldheads.’”

On a subsequent trip to Peru in 1989, Dr. McGarrity’s guide told her that in Lima, “there’s a place where Bob Marley’s face is carved into the hillside above the city, and it also says ‘Bob Marley is king’ in English. And reggae is blasting everywhere.”

## GUATEMALA

Robert Roskind, a prominent exponent of One Love, has toured the world preaching Bob’s message. In a remote Guatemalan village he asked his guide “if Bob’s music is popular way up here in the highlands, where most people speak only Mayan and Spanish.” He was told: “There is not one home in the whole area that does not have his music.” According to an elder, Tata Pedro, “this 2012 business is a One Love business—for those that can see it. The Great Cycle that began 5,225 years ago in 3115 BC ends on December 21, 2012, and that is the end of Babylon and the return to Zion.”

## HAVASUPAI & HOPI

At the bottom of the Grand Canyon lives a small band of the surviving members of the Havasupai tribe. Damon Watahomigie, a reggae singer there, recalls a prophecy of the Sioux nation that spoke of “the coming of a seer, a reincarnation of Chief Crazy Horse as a black man. He would invoke the Fourth Apocalypse to liberate the downtrodden red man. Like Anancy [the mischievous African spirit], he would breed dissension. I believe Bob Marley was that prophet, sent to free us from mental slavery.” On the nearby Hopi reservation in northeastern Arizona, an Indian organization known as the Culture Connection has presented, over the past 20 years, more than 70 Jamaican reggae acts in their tribal hall.

## BRAZIL

In the violent chaos of Rio de Janeiro’s *favelas*—fetid slums ruled by heartless drug lords—a reformer by the name of Jose Junior began assembling workshops to teach about Brazil’s African heritage, utilizing music from the mother continent as well as hip-hop, samba and a major helping of reggae. The resulting group, Afro Reggae, opened for the Rolling Stones on their world tour in 2006. Raves singer/composer Gilberto Gil, a former cultural minister of Brazil whose album of Marley covers was a local best-seller: “Afro Reggae have built houses of culture and music right in the middle of all this violence.”

## THE BALKANS

In the southeastern Serbian village of Banatski Sokolac, a statue of Marley created by sculptor Davor Dukic was presented to the public in August of 2008. Attending were Croatian rock star Dado Topic and Serbian musician Jovan Matic, who together unveiled the statue. The event’s organizer, Mirko Miljus, explained: “Bob Marley promoted peace and tolerance in his music.” His inspiration was embraced by members of the previously warring ethnic groups, who have each employed reggae rhythms in their music.

## ERITREA

Bruno Blum, the French musician, composer and producer, spent a musical residency in Eritrea recently, where he recorded the local artists with a cultural grant from the French government. During the course of production, his Asmara All Stars project was stalled for weeks due to official committees discussing whether or not to give permission to record further. So Blum decided to organize some live shows in the interim. He recalls: “As we waited for the Cultural Affairs Committee to make up their mind, I suggested to the musicians that we should play famous, easy songs in order to avoid too much rehearsal. So I requested that we play obvious favorites by the likes of James Brown, Led Zeppelin, Jimi Hendrix, the Beatles, Michael Jackson .... But no one knew any of those artists in a country that has been all but closed to the outside world, let alone their repertoire. Then I saw a huge Bob Marley poster in the studio. Everyone knew who this was! Most of them had heard at least some of his most famous songs, sold on bootleg cassettes in some street shops. So I taught them how to play ‘Get Up, Stand Up’ as well as ‘War’—which, incidentally, happens to have lyrics taken from Ethiopian Emperor Haile Selassie’s speech at the UN General Assembly on October 4, 1963. It was Selassie who Eritrea first fought during its independence war, and he is roundly hated as a symbol of bloody repression. But although some had heard Marley before, no one knew the lyrics were Selassie’s as I sung them to a crowd that included local officials: ‘Until the philosophy which holds one race superior and another inferior is finally and permanently discredited and abandoned ... until the color of a man’s skin is of no more significance than the color of his eyes, everywhere is war.’ The next day, I was simply told that one official’s reaction was, ‘Is this guy here to make music or to do politics?’”



## FRANCE

As the Paris-based Blum also points out: "When Marley sprang up in '75 with his revolutionary lyrics like 'Rasta don't work for no CIA,' many young Europeans instantly felt Bob was carrying the struggles of Africa and of all the oppressed in the so-called 'Third World' on his shoulders. Some of the black French-Caribbean populations identified with him; reggae gradually grew into these populations at home and abroad, and became popular in Africa largely through their influence. Ivory Coast singer Alpha Blondy is one of them—turned on to Bob Marley, he decided to drop his rock group and get into reggae because 'Jamaicans are more African than Americans.'"

Blum recently remixed French superstar Serge Gainsbourg's 1979 Jamaican sessions for Tuff Gong, recorded at Marley's Kingston studio with his back-up singers, the I Three. Gainsbourg's pop-charting attention helped Marley play to one of the biggest audiences of his life the following year at Le Bourget Airport in Paris.

## GHANA

Ghanaian reggae star Rocky Dawuni notes: "I think if you look at the extent of reggae, and how people in countries at war that are trying to free themselves, like freedom movements all around, have now rallied around reggae as the music that they know they can use to really make their message be heard ... and also the spiritual nature of Bob, explaining God in a Christ-like incarnation, the all-loving God—his music basically expressed it and lived it. So it's like his influence right now has been to reiterate the words of all the prophets—David, Moses .... Bob Marley is like the soundtrack of existence today in Africa."

## PHOTO KEY

- 1) A New Zealand t-shirt. Photo by Roger Steffens
- 2) A hand painted beaded curtain from Saigon hangs next to a sarong from Bali. Photo by Roger Steffens
- 3) Ukrainian nesting dolls of Bob Marley. Photo by Roger Steffens
- 4) Marley joins Ghandi in this peace mural in Bastogne, Belgium. Photo by Mike van der Linde
- 5) A statue erected by Serbs and Croatians. Photo credit unknown
- 6) A Marley mural in Asmara, Eritrea. Photo by Bruno Blum
- 7) Marley stamp from African nation of Burkina Faso.
- 8) Japanese street vendor in Tokyo. Photo by Roger Steffens
- 9) A Marley fan in rural Thailand. Photo by Mike van der Linde
- 10) Jah Reggae Shop on Guam draws customers from throughout the North Pacific. Photo by Roger Steffens

## NIGERIA

Adebayo Ojo is a Nigerian biographer of Marley who points out that, in the most populous black nation on earth, "there are millions of Marley fans cutting across religious, age, social and gender barriers. Marley is seen in many respects, more importantly as *kaya* man, prophet and freedom fighter, perhaps less as singer and entertainer." His songs are not played lightly there, Ojo adds: "Whenever Bob Marley is on the air, rest assured that something of significance is afoot, whether this is occasioned by industrial strikes, fuel scarcity, university closures, delayed workers' salaries, communal clashes, strife in oil-producing states .... Whenever there is a great injustice prominent enough to come to public and media attention, not one but many stations will start playing 'War,' 'Get Up, Stand Up' or 'Zimbabwe.' In the same vein, 'Natural Mystic,' 'Real Situation' and 'So Much Trouble' is the ominous trio with which approaching disasters and tragedies are heralded and protested. There are apparently no better songs with as deep an emotional and principled commitment to summarize and 'chant down' the contradictions and insanity in human society. After hearing this trio, you can very predictably expect a stop in program—I mean a real *pause* or *timeout*—then, suddenly, 'One Love' will ring out."

## IVORY COAST

If there's still any doubt that reggae has become the "rhythm of resistance" in the world today, consider the "Christmas Eve Coup" of 1999 in Ivory Coast, where reggae was banned from all airplay. Singers like Alpha Blondy and Tiken Jah Fakoly urged listeners to fight "the powers that divide," and suddenly, finally, the airwaves were filled with the sounds of militant protest reggae, lit by the flames of Marley's passion and pleas. The crowds in the streets wanted reggae, and the newly freed broadcasters answered the call. Reggae became the street-savvy conscience of the nation, holding its leaders' feet to its fire.

## OTHER EVIDENCE

Island nations large and small seem especially responsive to the laconic insistence of the reggae beat. Witness New Zealand's zealous 1979 welcoming ceremony, during which Bob was bestowed with the honorific title of "Redeemer." The Kiwis' national holiday falls on February 6, Bob's earthday, and so everyone ignores the official reason and instead celebrates "Uncle Bob Day," with his music ruling the airwaves and live shows abounding. Or take Guam, where SOJA, a white reggae band from DC, has drawn 5,000 fans; or St. Croix in the British Virgin Islands, home to Midnight, a loose confederation of dreadly-serious-as-a-heart-attack Rasta fundamentalists, whose music has spread worldwide; or, more spectacularly, Hawaii, with its own thriving form of soft lovers'-rock reggae and two full-time 24/7 reggae stations.

Japan claims hundreds of homegrown ska and reggae bands now, and classic old-school Jamaican artists routinely cut albums solely for Japanese consumption, often produced with Japanese engineers on the board. The Aboriginal people of Australia play Marley constantly on their radio station, beamed from the sacred mountain of Uluru, and hail him as one who, like them, bestrides the rhythms of the very planet itself, attuned to the highest psychic regions.

Thailand beach pubs and Nepalese guest houses high in the Himalayas alike bear his name proudly, both beckoning the 21st-century hipster, who knows that if one identifies oneself as a fan of the Reggae King, a whole heap of things are known instantly, and there's no need for extraneous conversation—just light up a fattie and share it over your favorite psalm, for that is what Bob's art director, the eloquent Neville Garrick, said: "Bob Marley wrote the new psalms." And like King David of old, his are words that you can dance to, head-ucating yourself to the eternal verities while head-resting with Jah, in tune with his omnipresent prophet.

Let Dr. McGarrity have the final word: "I think the greatest contribution of Bob Marley was the way that he resurrected the Third World from being a backwater, from being a place that had nothing to offer except a history of oppression and subjugation, to being in the vanguard of the cultural movement throughout the world. This whole emphasis now on world music—on Aboriginal music, Madagascar, African music, Haitian music—nobody was thinking like that before Bob pushed reggae to the top." ✨

Roger Steffens is the co-author of *Reggae Scrapbook* and has lectured internationally on the life of Bob Marley for 26 years.



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Worse, almost all bloom boosters have incorrect ratios or types of phosphorus and potassium. Most provide double the amount of phosphorus to potassium. That's not useful. Your plants need much more potassium than phosphorus during bloom phase.

And when too much phosphorus is dumped into your plants, it creates a potential for phosphorus toxicity that works against flower production and overall plant health. Not only that, your crops may taste harsh so they hurt your throat and lungs.



## Fast Facts

**PRODUCT TYPE:** Bloom Booster

**GARDEN TYPES:**

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**WHEN TO USE:**

Peak bloom phase.

**MIXING DIRECTIONS:**

Use 2 mL per Liter during weeks 2 through 4 of your flowering phase.

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**DERIVED FROM:** Potassium Sulfate, Potassium Phosphate.

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# THE ROAD TO ACCOMPOUND

**Before a ragtag band of American colonists fired the “shot heard round the world” that started our revolution against the British, a group of escaped slaves in Jamaica fought the redcoats and won their own independence. Known as the Maroons, their descendants continue to live under their own autonomous rule deep in the mountains of Jamaica.**

**By Chris Simunek | Photos by Brian Jahn**

**Jamaica is beautiful,** Jamaica is magnanimous, Jamaica’s got a soul as round and fat as a King Tubby bass track, but Jamaica is a battleground. From about the second or third week after Christopher Columbus arrived in 1494 up to this hot and sunny day, Jamaica has been fighting—with itself or someone else, usually both. Jamaicans have a long tradition of not rolling over, even when the numbers are against them. Resistance on this small island is second nature.

As I cruise through the streets of Kingston on the way out of this sun-stroked, dust-choked city with Brian Jahn, the photographic half of our journalistic partnership, and Carlton, Rastafari master of traffic and Ital chef extraordinaire, the voice on the radio is describing the extradition battle being fought with Washington over Christopher “Dudus” Coke, alleged kingpin of the Jamaican Shower Posse, the ruthless narcotics syndicate whose reach is said to extend throughout the island into Miami, New York and Los Angeles. The Feds are demanding Dudus’s hide; the Jamaican government is accusing Uncle Sam of illegally wiretapping him on sovereign Jamaican soil; and the opinion in the streets is that Washington should let Jamaica handle Jamaican affairs. In what some say is America’s retaliation for Jamaica’s stalling, a slew of visas for the dancehall stars Beenie Man, Bounty Killer, Mavado and Aidonia were cancelled recently without warning. No one here is under any illusion regarding the brutality of the Shower Posse—they got their name from

their habit of showering people with bullets—but Dudus’s reach extends well past the stone walls of his Tivoli Gardens stronghold, some say to Prime Minister Bruce Golding himself. It’s a fact of Jamaican politics that no one gets too far without the help of ghetto enforcers “getting out the vote.” So for the time being, though Mr. Coke isn’t exactly a national hero, there’s a grudging satisfaction in watching the US lose.

We’re headed deep into the country to visit the Maroons, the descendants of the fierce band of warriors who escaped from slavery about 300 years ago and fought the British to a bloody stalemate, resulting in a treaty that gave them freedom 125 years before Lincoln’s Emancipation Proclamation. Today, they continue to live under their own self-rule. I’m not sure what we’re going to find, as I had no way to contact anyone there prior to our arrival. In Jamaica, what you hope to get and what you wind up with are always two different things anyway—the key is to not worry and enjoy the ride.

Cockpit Country has been home to the Maroons for over 300 years.





Carlton tends to a plant back in Kingston.

Our guide Carlton eats all day long, but I'd be surprised if he weighs more than 100 pounds. He's wiry and intense, like a coyote that just heard a rumble in the grass he's not so sure about. Food is the means through which Carlton interacts with the world; it's his mission to provide healthy sustenance to his friends. As we drive, a commercial comes on the radio, two excited men talking about all the things that can be bought at Burger King for 100 Jamaican dollars—Whoppers, chicken tenders, Whopper Juniors—and I hear Carlton groan, wounded, as the image of all that charred flesh pollutes his Ital thoughts.

I'm the beneficiary of a 20-year friendship that Brian has had with Earl "Chinna" Smith, the session guitarist who played with Lee Perry's Upsetters and his own Soul Syndicate in the '70s and '80s, and whose name appears on the back of most of the crucial reggae albums in my collection. Chinna has graciously offered to put us up at his house in Kingston for the week.

Since the last time I visited Chinna's home 12 years ago, it's been transformed into an outdoor studio, including a drum set, several Nyabingi drums, guitars, amplifiers, an electric piano and an old acoustic upright. Dozens of musicians come and go from the afternoon into the night, picking up instruments and jamming, usually with Chinna in the center on guitar, giving subtle directions, playing his trademark jazz arpeggios and phrases. The guys will lock into a riff and a vocal groove and improvise on that for 20 minutes or longer. Surprising things, too—like yesterday, they laid into "Down by the River," and I tell you, forever after, they will have co-ownership of that song with Neil Young, at least in my memory. Four or five voices harmonizing "I shot my baby ..." while another scat-sang over the top; it was spontaneous, unrehearsed, alive.

The jams go on into the night, the smoke



Chinna (left) and Kiddus I (right) lead an afternoon jam.

## The jams go on into the night, the smoke from marijuana wafting up through dreadlocked heads.

from marijuana cut with locally grown tobacco leaves wafting up through dreadlocked heads bowed before the chalice, the sacramental Rasta water pipe. Rastas don't go to church; the jam is their mass, whether it's a jam on music or a jam on conversation—people trading knowledge, laughs, music, herb. Chinna has been recording these sessions and releasing them in a series called *Inna de Yard*. Reggae has gone through so many changes over the decades, and I'd argue that it has become too slick and overproduced. What Chinna is doing is bringing it back to its roots—to the *wood*, the acoustic birthplace of all music. It's a conceptual thing, and all the starts and stops and the occasional flubbed note are part of the design.

It's that same "whatever happens, happens" energy that propels us into the less-traveled sections of Jamaica on this day. Before we left, I talked to Kiddus I, the singer, who spent some time up in the mountains with the Maroons. He told me that the Maroons are an interesting, if enigmatic, bunch. He also told me, half-joking, that there's a saying amongst the Maroons that goes like this: *Me no send, you no come*.

When Christopher Columbus "discovered" Jamaica in 1494, it was populated by the Tainos, a seafaring people originally from South America who spoke a dialect of the Arawak language and made the Greater Antilles and Bahamas their home. They called Jamaica *Yamaye*, or "land of springs." When the Spanish arrived in the area, they were initially welcomed, the Tainos believing they were gods fulfilling a prophecy about a people who would come wearing elaborate clothes and carrying "thunder and lightning." Columbus himself, when he first encountered the Tainos in the Bahamas, wrote: "They traded with us and gave us everything they had, with good will. They took great delight in pleasing us. They are very gentle and without knowledge of what is evil; nor do they murder or steal ... in all the world there can be no better people."

The lovefest didn't last. In Hispaniola (modern-day Haiti and the Dominican Republic), Columbus began a program in which the Tainos were ordered to deliver gold and cotton; if they failed to pay tribute, their hands were cut off and they were left to bleed to death. There are millions of ghosts in the Americas today that can attest to the fact that kindness was a virtue wasted on the Spanish. Within 50 years of the Spanish conquest of Jamaica, the Taino population was decimated by war, famine, disease and slavery. It is said that many of the Tainos committed suicide rather than be enslaved by the Spanish.

The Spanish held Jamaica until the English arrived in 1655 with a fleet of 38 ships and a



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Two and a half hours after leaving Kingston, we arrive.



The Kindah Tree.

## Word of the African warriors who'd rather die than retreat sent waves of fear through the British army.

crew of 8,000 men. The English were latecomers to the New World, but made up for lost time by colonizing the eastern parts of North America and wresting what lands they could from the Dutch and the Spanish in the Caribbean. The superior English force gave the 1,500 Spanish who held Jamaica a chance to surrender. Instead, the Spanish retreated north and sailed off to Cuba. In an effort to slow the British onslaught, they freed their slaves and gave them a few lessons in warfare. The slaves, who had been captured on Africa's Gold Coast, were fierce fighters in their own right. They headed to Jamaica's mountainous interior, today known as "Cockpit Country," where they met with the remnants of the Taino population. Today, the descendants of these people are known as the Maroons, from the Spanish word *cimarrón*, meaning "wild" or "untamed." Their numbers swelled as they were joined by more Africans, some of whom had escaped their slave masters, others who'd been freed by the Maroons in their numerous raids on British sugar plantations.

Determined to put down the revolt, the British brought over legions of redcoats and armed bands of Indians and slaves from Cuba, but word of the African warriors who would rather die than retreat sent waves of fear through the British army. In an effort to end the war, the British at one time proposed an armistice. Basically, they offered these rebels their old jobs back: *Return to the plantations and there will be no more trouble.* But trou-

ble—for the British—was exactly what the Maroons had in mind.

Navigating Cockpit Country today, even with the benefit of roads and an automobile, is treacherous. Smoke rises from beneath the hood of our car as Carlton, Brian and I whip around blind curves bordered on one side by stone and on the other by a 1,000-foot drop. When you look down into the valley below, with its jagged volcanic basin covered 20 feet high with thick jungle brush, it's no wonder that the British finally signed a treaty with the Maroons in 1738—the only question is why they waited so long. The idea of trying to cross this land in a time before roads, on horseback, in 100-degree heat, carrying munitions and clanging swords and wearing itchy wool uniforms, while the whole time guerrilla bands of Ashanti warriors trained in the twin arts of camouflage and ambush try to stick you with the sharpest thing they can find, is laughable.

As we pass by the Appleton rum distillery, the air turns sickly sweet, like syrup had just rained down from above. We come to a town called Retirement, and the road narrows and seems to crumble beneath our tires. As we approach Accompong, we pass a car flipped off the road, its labyrinthine underbelly exposed to the sky and covered with dust like a long-dead beetle. *There but for the grace of Jah go I.*

Rolling into town, we find a few young men hanging out in front of the local bar drinking beer, their clothes and skin covered with dust

as though they'd just gotten off work. Since winning their independence in 1738, the four Maroon villages—Accompong, Charles Town, Moore Town and Scott's Hall—are governed separate from the Jamaican state by an elected representative, the Colonel, and his handpicked council. All matters of Maroon life are decided by the Colonel, and he's the man we hope to talk to. Basically a state within a state, the Maroon territories have no police force, very little crime and only one reported murder as far back as anyone can remember. I think about that as soon as we find ourselves surrounded by people who want to know exactly we're doing in the land of "Me no send, you no come."

Mark, a young man with a black do-rag covering his head, pulls us aside. We explain that we're journalists come to learn about the Maroons. We're in luck, he tells us—he's a tour guide. I'm suspicious. I show the crowd a copy of *HIGH TIMES*, which makes them laugh, and pretty soon they're asking where they can find quality *indica* genetics. I ask about the Colonel. Mark pulls out a cell phone, dials a number and hands it to me. On the other end is the man himself, Colonel Ferron Williams, telling me he's in Negril and can we possibly come there for the interview? When I explain that isn't possible, he suggests we talk to Mark, who is indeed a tour guide.

We walk into the restaurant, and Carlton demands to speak to the chef. When they tell him what's on the menu, he pronounces that no, he does not eat chicken flesh, and furthermore, the rice and peas they have to offer are an insult—too much rice, not enough peas. He asks for juice, and they offer a Tropicana fruit punch. *Blood clot!* When he inquires whether they mind if he smokes some chalice, they really get annoyed. A Rasta shows up with some bananas and oranges. Before I know it, Carlton is heading for a local Rasta kitchen where he hopes someone has a clue as to food.

The town of Accompong consists mostly of small stone houses with trees and gardens in between. Neither rich nor poor, on the surface it's like most Jamaican mountain towns. There's a hotel under construction, but it doesn't seem there's any hurry to finish it. Farming is the main industry here, but that has waned a bit since the Appleton Estate stopped buying their sugar cane.

Mark leads us to the local schoolyard, which has a sound system with a 10-foot stack of speakers set up to blast the kids with dancehall rhythms during recess. From there we're led to the Kindah Tree, a majestic 300-plus-year-old mango tree beneath which the warriors used to sit in council and plan their battles. It was here that the great Cudjoe, scourge of slave masters and soldiers alike, rallied his troops.

Cudjoe and his siblings—sister Nanny and brothers Johnny, Cuffee, Quao and Accompong (for whom this town is named)—were escaped slaves who joined their Spanish-freed counterparts. The siblings split up and organized their own warrior bands in separate parts of the mountains. Under the leadership of Cudjoe and his kin, and utilizing the Ashanti battle tactics

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Getting the ganja ready for the chalice.



Medeval Currie

Nanny, Warrior Queen.



## An herbalist practiced in the mystical arts of obeah, Nanny was said to have been able to catch bullets in her hands.

they'd brought with them from Ghana, the Maroons became a formidable fighting force. Cudjoe, who is described as having been short and "bear-faced," with a large lump of flesh on his neck, became the leader of the Leeward Maroons—in effect, the first Colonel. Nanny formed the Windward Maroons, and it is said that her military expertise equaled, if not surpassed, her brother's. An herbalist practiced in the mystical arts of *obeah*, Nanny was said to have been able to catch bullets in her hands. Under the leadership of this family, the Maroons fought the British to a bloody stalemate.

Leading us down a rocky path deeper into Cockpit Country, Mark points out the various medicinal plants they still use to cure indigestion, chest congestion, mosquito bites and the common cold in preference to Western medicine. Marijuana, too, is a part of their pharmacology—not to mention their economy—and he shows us a small patch of plants, only a few weeks old, as it's the beginning of the new planting cycle. Cannabis farming is a point of contention for some in the Maroon community, because this is the one area where the Jamaican government feels that it can disregard the treaty. In fact, Mark tells us, it was ganja that was the root cause of the one reported murder in Accompong in recent memory.

"It was someone who came in to steal, and he pull a gun and was bursting it all over the place," Mark explains. "And he got hit down and beaten, and when we check him out, he was a police officer from Kingston come to thief.

Thirty years ago. He come from Kingston to steal you-know-what."

Colonel Williams, when I talked to him, had no sympathy for the marijuana trade. In addition to his job as Colonel, he's also a member of the Westmoreland police force, and said that the issues that concerned him had to do with infrastructure—power lines, running water, the deplorable state of the roads—and unemployment, which causes young people to leave the territory. As for ganja on Maroon land, he said: "Trying to maintain our sovereignty does not mean we are opposed to law and order."

In an impromptu lesson on the ambush style of Maroon warfare, Mark wraps himself in vines and shows us how it is possible to disappear in the brush. He tells us the story of one famous Maroon victory that occurred at what is now called the Peace Cave. The Maroons had ambushed a British legion, then cut the ears off the two remaining survivors and sent them back to their commanders with a message: "Tell them to send more."

Talk about a shit detail. You have to imagine that the whole time those two British soldiers were humping it back through the mountains, sweating in their itchy wool suits while bugs buzzed around their mangled ears, they entertained the possibility that, at some point, their lifelines had taken a wrong turn. Some lessons demand an even more extortionate tuition than a semester at NYU.

The peace treaty was signed in the Peace Cave, about an hour and a half's hike from

where we are. Ending the First Maroon War (there would briefly be a second), the treaty held throughout British rule, continued after Jamaica's independence in 1962, and is honored to this day. Every year, on January 6, the Maroons sponsor a festival to celebrate their victory.

It's a testament to how debilitating the war was on Cudjoe's forces that, in order to gain their autonomy, they agreed to act as a proxy police force for the British, putting down other slave uprisings and capturing and returning escaped slaves in exchange for compensation. For this reason, there's a stigma attached to the Maroon legacy. Today Jamaica celebrates the history of the Maroons, and each new prime minister makes the trek to Accompong at some point during his tenure. Nanny was the first woman to be declared a national hero in Jamaica, and her face appears on the \$500 bill (commonly referred to as a "nanny"). But mention the Maroons to the average Jamaican and you're as likely as not to hear them denounced as "traitors."

I know it's presumptuous, maybe even arrogant, to hope to grasp 300 years of Maroon culture in a single day, but it's only out of respect for their history that I made the trip. I ask Mark if there's an old guy in town, someone who likes to talk and who might be able to tell us what life here was like years ago. He takes us to the home of Medeval Currie, who's in bed watching television when we ring. A sweet-faced man of 77, Mr. Currie was once a member of the council and second in line to the Colonel. He talks about the old Revival church and the Pocomania religion that traces back to Africa. He describes what it was like in his youth, the Christmas parade through town—African style, with beating drums—and the nights of dominoes and dice.

"What's the best thing about living in Accompong?" I ask him.

"The best thing, you are free," he says. "Our lands are free; we don't have to pay taxes like other parts of the country do. The community is nonviolent. You come up the street, you have your camera with you, you don't have anyone trying to draw it from you. That's not a part of our culture. I'm living here—when I'm sleeping, the door is open. You going through the streets, you can stop and speak with anyone, no matter who."

"You must have a great feeling of responsibility," I say, "to keep this gift that you have pure."

"We hope, because I am getting very old now, that the people behind us stand up and keep what is theirs. Because our forefathers fought for it, they won it—if we don't pass it down, then they would have died in vain."

It's Sunday back in Kingston, and I can hear a church choir in the distance as I sit and read the *Star* in Chinna's yard. The Shower Posse is back on the front page: This time it's the death of Vivian Blake, former ruler of the American end of the gang, that's grabbing the headlines. He'd just returned to Kingston last year after an eight-year prison term in the US—a pretty short stretch for a guy the Feds said was responsible for 1,400 killings, but I'm no

CONTINUED ON PAGE 92

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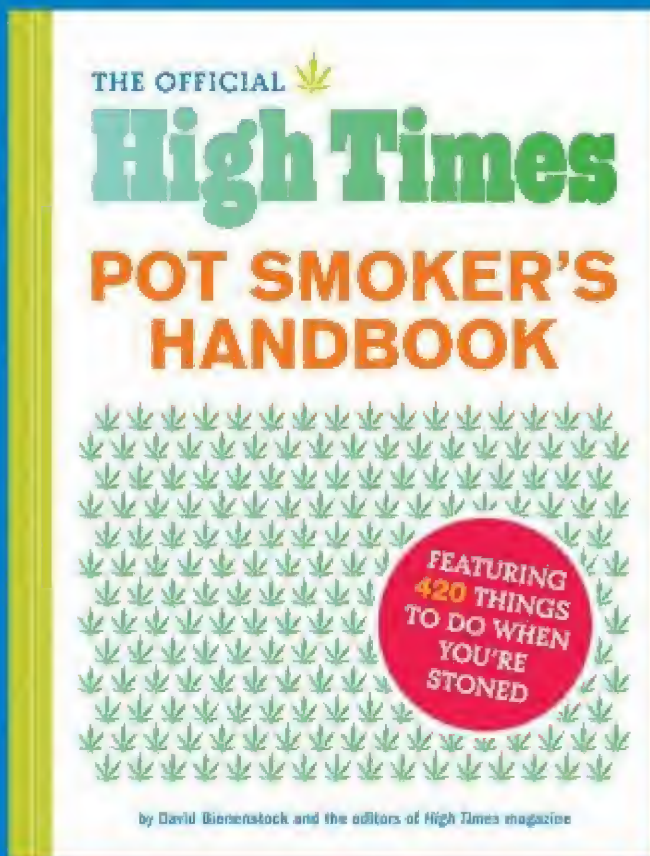
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Learn how to build a reliable, virtually carefree deep-water culture cultivation system with readily available materials. A top-flight grower shows you how.

# BUBBLING BUCKETS

BY BOB LEE GORDON • PHOTOS BY DAN SKYE

A look inside a bubbling RDWC bucket with an air stone at the bottom.

**In 1936** W.F. Gericke of the University of California coined the term “hydroponics,” from the Greek words *hydro* (“water”) and *ponos* (“labor”), in a paper describing how to grow tomatoes using this technique. Since then, some exciting new methods and products have evolved. One of these is a process called deep-water culture (DWC), also known as “aeroponics” or “bubbling buckets.”

Deep-water culture is the method of growing a cannabis plant in an inert, absorbent media (such as hydroton or expanded clay pellets) in a basket that sits over a reservoir containing nutrient solution. There are two main types of DWC. One is a stand-alone system wherein a reservoir (usually a 5-gallon construction bucket) is filled with nutrient solution; a bubbler stone is placed on the bottom, while the basket sits on top. This method works well, but there are limitations when growing multiple plants due to the fact that the levels of total dissolved solids (TDS), pH and electrical conductivity (EC) have to be monitored in each individual bucket.

A better method of DWC is known as recirculating deep-water culture (RDWC). This method utilizes a central reservoir to provide water for multiple buckets and a top drip-feed system to provide new nutrients constantly. The level of each bucket is kept constant via a float valve in the reservoir that keeps the bucket from overflowing when the drip emitters are feeding from the top. It works much like water in a hose



A line of eight connected RDWC buckets on a 16-bucket controller.

that is plugged on both ends: As you raise and lower the hose, the water meniscus on each side stays even with the inverse level changes. With this method, you are able to maintain multiple buckets while maximizing plant size and yield.

Here's a complete guide to building and operating your own RDWC system. To build this system, you'll be purchasing items from both your local hydroponic and hardware stores. First, decide how many plants you want to grow. Ideally, there should be 16 plants or less per reservoir. It takes approximately 40 gallons of nutrient solution to run a system with 16 buckets. Any 20- to 35-gallon container will work as a reservoir; however, General Hydroponics sells a system that is specifically designed for this application, called a Texas Controller. These controllers are stackable reservoirs that hold 20 gallons each. The bottom reservoir has a float valve that keeps the water in the top reservoir from coming down unless the water level in the buckets and reservoir is depleted. As the water level drops, the float lowers, allowing water from the upper reservoir into the lower one to top it off. This is how the water level is maintained. In addition, there's a 4-gallon-per-hour drip emitter on top of each bucket that constantly feeds the roots, which begin to grow rapidly and colonize once they reach the oxygenated nutrient.





A flowering Bubble Jack (Bubblegum x Jack Herer) thrives.



The Texas Controller, a stackable series of 20-gallon reservoirs.



End-of-line assembly for the last bucket on the controller with a 3/4" 90° plastic barb connector.

The buckets are connected by 3/4" black vinyl tubing (the tubing must be black or else algae forms when the water comes in contact with light). Each bucket has a 1-1/8" bulkhead with a 3/4" plastic barbed T connecting all the tubing. The last bucket in the line must have a 90° 3/4" plastic barb for connection so that an end-of-line water level can be obtained. A 3/4" vinyl gravity-drain line is drilled in and connected to the bottom of the reservoir.

The drip emitter is connected to a bulkhead near the bottom of the reservoir. It's fed by a pump at the bottom of the reservoir that runs constantly. This has two functions: First, it helps keep roots clear of any salt buildup, and second, when the transplants are new, they're still fed until their roots reach the water. The main advantage to an RDWC system is the massive rhizosphere (or root zone) that is produced to create large, sustainable growth, therefore maximizing plant size and yield.

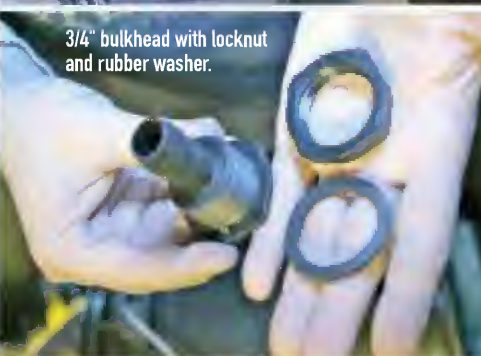
When you set out to acquire the materials needed for your RDWC system, keep in mind that some hydroponic stores don't carry many of the fittings other than bulkheads and screens. This means a trip to the hardware store is in order. Almost everything you need can be found in the plumbing/sprinkler section. An important thing to remember is that some tubing (especially the 1/2" poly) is sized for the outside diameter. When you purchase your tubes and fittings, make sure that the measurements are for the *inside* diameter (i.e., 5/8" outside-diameter poly has a 1/2" inside diameter). Most vinyl tubing is sized for the inside diameter.

Once you collect all of the materials needed, it's time to install and configure your RDWC system. There are several ways to do this. Most shapes will work as long as you have smooth lines (i.e., no kinks in the tubing) and use your 90° barbed fitting at the end to establish the end-of-line water level. In my experience, straight and horseshoe shapes flow best.

Various barbs, plugs, bulkheads, and tubing required.



Drill a 1-1/8" hole to attach bulkhead to bucket.



3/4" bulkhead with locknut and rubber washer.



Screw the fittings into the bulkhead.



Cut 3/4" vinyl for T assembly and connection.



Finished bulkhead assembly.

## TOOLS YOU'LL NEED

drill  
1-1/8" hole saw or unibit  
irrigation hole punch  
scissors or pruning shears or PVC cutter to cut tubing

## EQUIPMENT REQUIRED

1 - 35-gallon container for reservoir (or 1 Texas Controller)  
16 - 5-gallon construction buckets  
16 - black planting baskets  
16 - 3/4" plastic barbs with 3/4" thread  
1 - 3/4" plastic 90° barb connector  
15 - 3/4" plastic barbed Ts  
18 - 1-1/8" bulkheads  
16 - bulkhead screws  
3 - 1/2" barbs to 3/4" threads  
16 - large bubbler stones  
1 - 1/2" barbed plug  
50' of 3/4" black vinyl tubing  
50' of 1/2" black poly tubing  
100' of 3/4" clear vinyl tubing  
100' of 3/4" black poly tubing  
16 - 3/4" irrigation Ts  
16 - 3/4" black irrigation stakes  
1 - hydroponic water pump with inline capability

First, prepare your buckets with the bulkhead fittings and screens found at any grow-supply store (the standard size has a 1-1/8" outside diameter). Drill a 1-1/8" hole through the side of the bucket, approximately 1/2" to 3/4" from the bottom. Start from the inside of the bucket, as this allows you to screw the locknut with the rubber washer on the outside of the bucket. Attach the screen on the inside to prevent any loose roots or other debris from clogging the gravity-drain line.

Next, take your 3/4" barb to 3/4" thread fittings and screw them into the bulkhead. Cut and attach a 2" piece of 3/4" vinyl to the barb fitting and then attach a 3/4" barb T. Now, cut 3/4" vinyl to attach to all of the Ts in your system. I found that 18" pieces worked best, allowing all of my buckets to stand at least 18" to 20" apart. Once all the buckets have been attached, use the 90° barbed fitting on the end to establish the end-of-line water level for the last bucket.

The air lines come next in building your system. Drill a 3/8" hole 2" from the top of each bucket. Run 1/4" vinyl lines from the buckets to your air pumps and then connect the bubbler stone at the bottom. Next, drill a 1-1/8" hole in your reservoir about 3/4" from the bottom on the inside, just like the buckets. Attach a 3/4" barb to the 3/4" thread fittings on both the inside and outside of the reservoir and then finish attaching the 3/4" vinyl gravity line to the first bucket in the series. Your RDWC system is now connected!

To install the drip lines, drill a 1-1/8" hole approximately 4" up from the bottom of the reservoir. Attach another bulkhead and then screw a 1/2" barb to 3/4" thread fittings on both sides. Run 1/2" poly tubing next to the gravity line and zip-tie the two lines together to hold them in place. Plug the end of the feed line with a 1/2" barbed plug fitting and then connect to the reservoir. Now that the feed line is in place, put the pump in the bottom of the reservoir and attach a small piece of 1/2" tubing from the pump to the fitting on the feed line.

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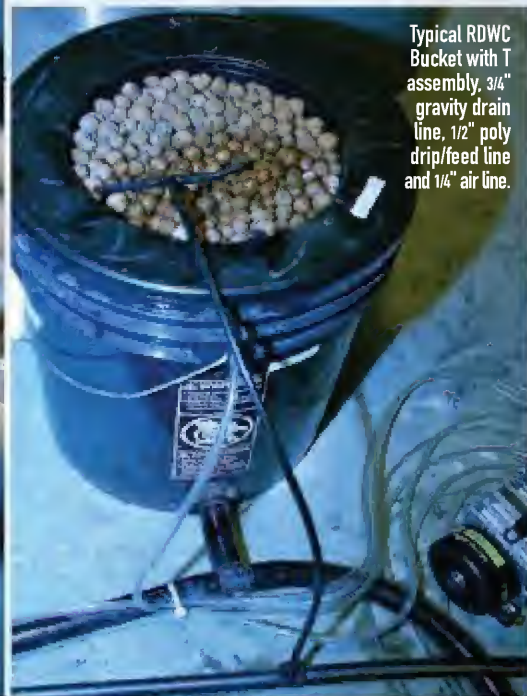
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Typical RDWC Bucket with T assembly, 3/4" gravity drain line, 1/2" poly drip/feed line and 1/4" air line.

Now you're ready to attach the drip emitters. Personally, I have found that it's easier to get a good seal on the emitters if there's water pressure in the line, so I suggest filling the reservoir first. Remember that each bucket holds 2 to 2-1/2 gallons of water constantly under normal operating conditions. If the reservoir cannot handle that amount of water initially when being filled, you might have to fill it slowly so that the water has time to drain into the buckets. Then turn on the pump to pressurize the line. Begin installing emitters on the last bucket so the water pressure is maximized as you work. Use a hole punch found at the hardware store that is made specifically for installing emitters. Punch a hole in the top of the line and push in the drip emitter until the emitter barb is popped into place. Rotate and pull to make sure that a good seal is established. Installing drip emitters while the water is pumping might seem a little unorthodox, and you will get a little wet in the process, but I have found this to be the key to establishing a good seal with no leaking. Next, connect a 1/4" poly to each bucket, then attach a T and snap it into place



Sweet Diesel stands tall.



Deep-water culture feeds plants in various stages of growth.

with stakes. Then turn on the air pumps and congratulate yourself on constructing your own RDWC system!

Two of the finest attributes of this system are simplicity and efficiency. RDWC systems are easy to operate and are known as a "fail-safe" system. Anyone who has ever grown can attest to some anxiety about their impending harvest, worrying each step of the way that Murphy's Law will make its way into their garden. With an RDWC system, you can put some of these worries to rest: If a pump fails or a timer goes out, your babies are still chilling in oxygenated nutrients at all times. It helps you sleep better at night, especially as harvest time nears.

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Operating an RDWC system is a cinch—just plug in your feed pump and leave it on 24/7. As it feeds from the top, it drips into the bucket from gravity pressure. A constant water level in the bucket is maintained, as the water level in the reservoir is the same and everything continues to circulate.

As far as maintenance goes, here are a few helpful tips. Make sure you buy a pump that has in-line capability. Most pumps have threads on the intake side once you remove the filter and the screen. Attach a 1/2" barb to 3/4" thread connector on the intake side. This allows you to connect a small piece of tubing to the inside barb of the gravity line and suck water right out of the buckets for easy draining.

Another tip: Use a separate container to mix nutrients when changing reservoirs. This ensures that when you're adding new nutrient solution to the reservoir, it's properly mixed and ready to use. This helps all of the buckets to have uniform TDS, pH and EC readings. Also, this system is known for fostering huge root masses, resulting in huge buds. When buffering or flushing, the larger the root masses, the higher the possibility of salts or buffers getting retained by these monster roots, so be sure to monitor readings frequently to keep from exposing your garden to harsh environmental changes.

Out of all the hydroponic methods this writer/grower has had the pleasure of operating, the RDWC is my favorite. I believe it's the future of hydroponic gardening. You use less nutrient and water with RDWC than you do with any other system—even ebb-and-flow tables—while the pure, aggressive nature of bucket feeding allows growers to maximize the size and yield of their crops. With the political environment regarding marijuana ever shifting—and not always in our favor—it's comforting to know that you're doing your very best to keep your plant numbers low while still producing the biggest, tastiest buds on the planet. ✨



Air pump connected to eight-line manifold for air stones. There are two pumps per controller.



The bottom of the reservoir, with float and drip/feed line.

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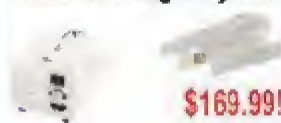
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In case you haven't heard, California is the Wild, Wild West of growing. In fact, California is a whole other world when it comes to cannabis. Some might say it puts Amsterdam to shame ... and they might be right. Here's how they're doing it, big and small, on the West Side.

# Growing on the WEST SIDE

Story and photos by Nico Escondido



Commercial cultivation like this utilizes 40 lamps and a variety of grow techniques to maximize over 600 plants.

It's truly amazing—and shocking to some—what's going on over on the west side of the United States. Places like California and Colorado are well past the days of marijuana prohibition, and even the medical movement is fast becoming a thing of the past as these states speed down the road to full-scale legalization. Cities like Las Vegas, Seattle and Eugene, OR, are now blooming outposts for the brave new world of cannabis freedom.

The climate of these places—both literally and politically—makes them a haven for growers. They are places where new horizons and new technologies are being explored, where bold is better and farmers of marijuana need not live in fear. And perhaps that *is* the biggest difference—at least for the droves of growers migrating from the eastern seaboard (and beyond) to become West Coast transplants. The openness and low-stress approach to growing out west is *much* different from some other parts of the country, where even a few plants in a closet are still considered an illegal operation.

What western natives and their new neighbors are discovering together are ways to grow comfortably and safely and enjoy life. With gardens ranging from large to small, and with both indoor and outdoor facilities available, the West Side has become a most attractive option for growers, breeders, patients and aficionados of Mary Jane.

## COLD RUSH

Of the 15 states that have currently enacted medical-marijuana legislation of some sort, California is by far the most prominent and best known, pushing even the federal government to take a new look at its cannabis laws. But most importantly for growers, California is a fertile testing ground for everything related to the cultivation of marijuana. It is here that the evolution of indoor growing is taking place and technology and information are in demand as never before.

In general, the varying laws among the 15 medical-marijuana states will dictate and define the approach that a grower might take—for example, the decision to grow only for themselves or for others as well. The law in California allows gardeners to do either, within certain parameters.

When it comes to indoor growing, there are two basic options: *commercial* or *functional* growing. Functional grow operations tend to stay on the smaller side and utilize one (or maybe two) small to medium-sized rooms. In these situations, growers aim for fewer numbers of plants, but those plants usually tend to be larger in size. Smaller caregivers or personal-use facilities tend to grow larger plants that are more shrub- or tree-sized, but this requires a longer vegetative time and produces fewer harvests and lighter overall yields per calendar year. (For more information on functional indoor growing for caregivers and patients, see “Maximizing Medicine” in our May 2010 issue.)

Commercial grow operations, on the other hand, are a much bigger endeavor and can be hard to handle for growers who have never had one before. These growrooms utilize industrial-type spaces and consume large amounts of resources, including electricity, water, medium and nutrients. But, if done right, these growrooms can supply medical states, dispensaries and patients with large quantities of high-quality medication.

## INSIDE THE MINES

### COMMERCIAL GROW OPS

In terms of cultivation, large-scale indoor grow ops on a commercial scale often go with a “sea of green” (SOG) or “screen of green” (ScrOG) approach. The theory behind this method of gardening is to grow a lot of plants of small to medium size, rather than fewer plants of large to extra-large size. In both commercial and functional grow ops, however, growers are wise to incorporate the art of trellising into their systems. Trellising allows growers to maximize their space and each plant’s growth potential, resulting in healthy gardens and better yields.

It’s fair to say that trellising has become a somewhat loosely used term through which growers have really combined the SOG and ScrOG techniques. Trellising can be done in a variety of ways; in larger grow operations, string netting serves as the most common screen, trellis or latticework when it comes to separating and supporting the branches of individual plants.

Depending on the number and size of their plants, growers must determine how much support and light penetration is required for their gardens. With smaller plants come higher plant counts and denser gardens. The need for trellising in this situation is more about spreading out the branches of each plant, creating shorter internode lengths and allowing better light penetration to produce buds over the top two-thirds of each plant. For medium-sized plants where the tops are pinched off several times and numerous top colas are produced, a more sturdy trellis system can be deployed. Bamboo sticks or a wooden lattice are often used in these situations, sometimes with a top netting as well to lend additional support to the heavier budding branches.



This garden uses string netting as a trellis to support and separate plant branches.

A smaller, functional growroom grows bigger plants with less lights.



### FUNCTIONAL GROW OPS

In functional grow ops, growers tend to raise larger plants in smaller quantities. The reasons for this can vary, but usually the grower is cultivating medicine only for one or two patients (versus trying to supply a dispensary that may serve several hundred). Also, state and local laws vary greatly in terms of the number of plants or the size of the garden that a patient or caregiver is allowed to have. To stay on the safe side, many medical growers opt to grow fewer plants of much larger size, since plant size, weight and yield are generally not factors covered by the law.

In a functional growroom, the plants will need much more support than their counterparts in an SOG garden. In this case, thicker and taller stakes or latticework will be necessary to allow growers to attach their plants’ branches to the support system. Multiple stakes with wire halos around them are a popular option for gardeners who need strong support and flexible points for branches and plant tops.



Frames are built in commercial spaces to hold loads of 4' x 8' tray beds.

## FRAMES, BEDS & CONTAINERS

### COMMERCIAL GROW OPS

In SOG systems, growers often choose to grow plants in shared beds rather than individual plant containers. Shared beds in commercial grow ops are usually purchased or built in the standard large format of 4' x 8' and can vary in depth from 4 to 12 inches. (Note: Store-bought trays come in a wide array of sizes other than 4' x 8'.) Shared beds or trays can be laid on the floor, but it's best to raise them up in order to better control the root-system and grow-medium temperatures, as well as to make the gardens themselves more accessible for maintenance.

Shared beds are usually placed in store-bought or homemade frames and laid end to end in larger growrooms to utilize the space more efficiently. Some growers prefer to put these beds on raised platforms for better support throughout the whole tray, while others prefer support legs made from cinderblocks or milk crates with a few support beams, making it easier to adjust the grow table's height as needed.

Flat or shared-bed systems are an excellent option for growers, because they can hold a large number of plants, usually from 12 to 32—and sometimes more, depending on the grow technique used. These beds also offer growers the choice to grow hydroponically in soilless mediums, or to fill the tray entirely with soil, or to use individual plant containers for each plant site with either a soil or hydroponic medium. Filling the entire tray with soil and planting your garden directly into it—the very essence of the shared-bed method—is one of the easiest and most efficient ways to garden. However, this technique also is better suited to advanced growers, since allowing numerous plants and their roots to compete for the same space and nutrients requires careful attention to each plant and its needs. Using individual plant containers is usually a better option for beginners, since it becomes a lot easier to remove single plants that may be sick or causing problems within a garden.

### FUNCTIONAL GROW OPS

Smaller gardens tend to use individual plant containers in order to produce larger plants and bigger yields. These containers can range in size, but for large to extra-large plants, a good range is anywhere from 10 to 25 gallons. Larger containers equal larger root systems and therefore, obviously, larger plants.

When choosing grow containers, it's important to look for durable, nontoxic materials. Metal pots can be hazardous, as they oxidize easily and may contain toxic additives or coatings. Clay, fiber, wood or plastic containers are usually the best bets for potting plants. However, even these may pose problems, as some clay pots can be heavy, brittle and moisture-absorbent, causing the grow medium to dry out quickly. Some plastics can be toxic as well, so be sure to buy these from a reputable grow shop or garden center. It may also be wise to drill extra holes in the larger plastic containers, as plastic tends not to "breathe" very well. Wooden containers offer a great solution to this problem, as they tend to be more permeable by air and, if being constructed at home, can be built to suit any type of space.



This SOG garden will weave the plants around the trellis netting as plants grow.



Large containers and lots of support are needed to grow larger yielding plants.

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This garden is using two 1,000-watt bulbs per 4' x 8' table for a total of 20 lamps in the room.

## LAMPS-TO-PLANTS RATIO

### COMMERCIAL GROW OPS

The lamps-to-plants ratio is the number of lights used in relation to the number of plants being grown. Growers commonly assume that the number of lights needed in a growroom is dependent upon the area that needs to be covered. This is correct to a certain extent, but it's also important to remember that plants compete for light indoors just as they would if they were growing in the wild. Insufficient lighting can cause plants to stretch, inhibit photosynthetic processes (like the creation and transport of foods within a plant) and not allow plants to reach their full yield potential.

In commercial grow ops where plants are packed much more closely together, the garden canopy can become very thick and prevent light from getting past even the top third of the plants. This will result in poor growth and low harvests. Good trelliswork in conjunction with sufficient lighting will help growers avoid these shortcomings. Growers need to ensure that they not only have enough lamps, but that they're using strong enough bulbs and have the lamps hung at the proper distance from the garden canopy.

Professional master growers such as Apothecary Genetics from California (some of whose growroom photographs accompany this article) know how to balance the lamps-to-plants ratio carefully so as to keep their power costs low and heat byproduct down, while still supplying their gardens with the proper amount of light. Utilizing high-pressure sodium (HPS) bulbs in a commercial grow op, these master growers will use two 1,000-watt lamps per shared bed. However, because this operation uses the SOG technique with string netting for trellising, the plants are packed tightly into the beds, with each 4' x 8' tray holding 25 to 30 plants each. Because of the number of plants being grown in each tray and the thick canopy that will soon develop, the lamps are air-cooled and kept only 5 to 10 inches above plant tops to maximize light efficiency and penetration.



This commercial growroom by Apothecary Genetics allows patients to see first hand how their medicine is grown.

### FUNCTIONAL GROW OPS

In smaller growrooms in cities like Boulder and Las Vegas, where the functional approach has been to grow larger, individually potted plants, the lamps-to-plants ratio is much higher, as more lamps hang over fewer plants. With this technique, plants are kept a small distance apart to make sure each one has its own space and doesn't touch its neighbors (which can prompt distress signals within a plant and cause it to stretch or grow irregularly).

In these types of growrooms, plants are grown in large containers that can range from 20 to 50 gallons, depending on the space the grower has to work with. The containers are often placed on sturdy boards with wheels. This makes the plants easy to move while also keeping them slightly raised off the floor. More importantly, this method allows plants to be shifted around and positioned better under the lights, and it also prevents a total canopy from forming so that light can reach all levels of the garden to ensure maximum yields.



Casters, or wheeled container platforms, are an excellent way to move large plants.



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ROCKABERRY



12 Plant PhD's Discover

The Japanese Engineering  
Breakthrough That's Allowing Growers

# To Multiply Their Yields

From Their Plants Within  
The Same Bloom Time



We all want our plants to get into peak bloom phase faster and to yield a bigger harvest. Now, a team of 12 plant PhD's and their research assistants believe they have found the answer ...

*"The secret," says Dr. Savov, "is we implement the Japanese engineering principle of continuous improvement – called kaizen – into developing a better 2-part premium bloom base fertilizer. The principle of kaizen states that small, continual improvements at each step of a multi-part process equals a much larger, compounded total increase in performance in the final product."*

## Compound Improvement ... The Most Powerful, Plant Growing Force In The Universe?

Much like Albert Einstein called compound interest, "the most powerful force in the universe"—these small, continuous improvements at each phase of a multi-part process yield a very powerful, impressive end result.

So, when it comes to a premium bloom base fertilizer — a team of 12 PhD's working for Advanced Nutrients in a leading Bulgarian research lab simply found multiple ways to improve upon each stage of the two-part process of growing plants.

In the end, it worked exceptionally well to achieve a bigger, compounded, yield — in at least one documented head-to-head, consumer trial — over 40% bigger!

## How This Scientific Breakthrough Gets Your Plants Into Bloom Faster and Multiplies Their Yield Without Increasing Your Bloom Time

First, the scientists wanted to improve upon the actual ingredients used in their 2-part formula. The idea was to give you better "Building Blocks" for your plants to use to get bigger yields, more colorful flowers, a stronger aroma and maximum potency. This was the first stage the team improved upon.

Next, they wanted to enhance your plant's abilities to get the maximum absorption of these nutrients because having the highest quality ingredients without ensuring your plants can fully absorb them is worthless. The scientists discovered that most growers aren't seeing bigger yields with other fertilizers because their plants aren't able to effectively absorb the nutrients being used.

Obviously, improving the absorption abilities of your plant greatly compounds the effectiveness of the high quality ingredients being used! Lastly, in an effort to maximize every part of your plant's deepest core levels of plant bloom metabolism and floral production, the scientists developed a proprietary blend of floral growth co-factors to activate and control these core issues.

These co-factors include amino acids and amino acid precursors essential to protein formation which promote cellular metabolism, replication and other bloom processes. In addition, other proprietary co-factors create enhanced changes in how plants carry out bloom

phase functions.

Let's examine how the scientists improved these phases in developing the ultra-premium, 2-part bloom base nutrient for Grand Master Growers – Connoisseur!

Instead of using low-quality, questionable ingredients—the team at Advanced Nutrients invested heavily in putting to use only the most potent, most effective, most proven ingredients possible (ingredients no other company uses because of the high cost to both source and manufacture these ingredients into bloom fertilizers!)

## How To Ensure Your Plant Gets The Maximum Uptake Of Nutrients ...

To start with, every single one of the micro-nutrients used in Connoisseur is chelated so you get maximum absorption and uptake of these amino chelates into your plants. With a theoretical absorption range of pH 1-10, this in effect means you get the highest absorption rate possible of these life-giving micronutrients for as long as your plant is alive!

What's more, Advanced Nutrients, has also invested heavily into chelating a high percentage of the macro-nutrients used in Connoisseur to get your plants to bloom faster and keep them in that bloom phase longer!

## How Growers Of High Profit Plants Are Making More Money With This One, Simple Scientific Breakthrough ...

If you count on your plants to make you money, you're going to love Connoisseur!

Here's why commercial growers of rare and profit-producing plants love this comprehensive hydroponics fertilizer formula ...

- You get a faster time to peak bloom time ... meaning you get to sell your plants faster!
- You get more flowers and more weight per flower ... which means more money per plant!
- You get more aroma, more taste, and more color in your plants ... which means you get more satisfied and repeat customers!
- The bottom line? You get more profits per each crop cycle!



## A/C & ATMOSPHERE CONTROL

### COMMERCIAL GROW OPS

When dealing with hundreds of plants, the number of lamps in use tends to get very high. And with that comes the unwanted heat byproduct of 40, 50 or even 100 high-intensity discharge (HID) bulbs. For even the most advanced growers, this can be a very tricky issue to tackle.

Commercial or industrial growers usually need to attack this problem on two fronts. First, it is always beneficial to find a growroom space that has centralized air conditioning already built in. This will greatly aid in controlling the atmosphere, and it makes it less likely that the grower will need to construct a discrete growroom within the larger space. Second, in these types of setups, air-cooled lamps are also a must. Using closed-hood reflectors and attaching ductwork to the side flanges to suck heat up and away is the best method for keeping bulbs cool.

This heat, however, then needs to be exhausted away from the grow space, and this can pose security concerns. This is why some commercial growers opt for constructing a large growroom within a larger space (such as a warehouse), so that they can exhaust the growroom's heat into the larger enclosed space (and also pull fresher, cooler air into the growroom from that same space) without any signs of a grow op being visible from the exterior of the building.

### FUNCTIONAL GROW OPS

Functional grow ops deal with the same atmosphere-control problems as their large-scale counterparts, and in these situations, security can be even more of a concern if the growroom is located in a home or community rather than an industrial area.

The problem of heat generated by lamps is still oftentimes solved by air-cooling the bulbs. Sometimes glass tubes are placed around the bulbs directly, or air-cooled reflector hoods are utilized. In smaller rooms that use only one or two lamps and are equipped with central A/C vents and good room exhaust, air-cooling isn't always necessary. This is especially true in milder climates where morning and nighttime temperatures don't exceed 70°F. In these regions, growers can fire up their lamps in the evening and give their plants 12 hours of light when the temps are cooler outdoors, thereby keeping their overall growroom temperatures lower throughout the entire flowering cycle.

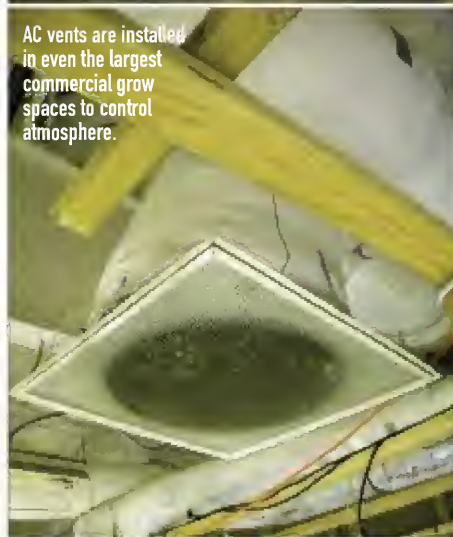
Still, there are plenty of small growers who use the same temperature-control methods as the commercial growers and construct their growrooms within a larger space, such as a house or garage. This allows them to recirculate growroom air without exhausting it from their home or building. This helps prevent heat from building up in the growroom and allows them to infuse the grow space with cooler air from the surrounding room, while at the same time providing optimal security in terms of avoiding suspicious exhaust vents and odor leakage.



Connecting lamps with flexible ducting and venting hot air out of the growroom helps keep temps low.



Notice the fans, AC vents and soilless mix used in this commercial set-up.



AC vents are installed in even the largest commercial grow spaces to control atmosphere.



A 300-gallon reservoir plus a 50-gallon mixing barrel provide excellent feeding capabilities.

## GROW MEDIUM & FEEDING

### COMMERCIAL GROW OPS

The medium used in commercial operations requires a different set of considerations than your average grow op. For starters, when dealing with hundreds or even thousands of plants, convenience and ease of use sometimes trump what might be a grower's ideal preferences.

For example, most growers prefer soil or soilless (peat-based) mixes because they provide excellent buffers against pH fluctuations and strong nutrient programs. However, filling tray beds or hundreds of 20-gallon containers poses some difficulties—such as safely bringing huge amounts of medium into a secret growroom location or disposing of them afterwards. In cases where growers refuse to give up their ideals and continue to use soil or soilless mixes, innovative ways to recycle these mediums can be developed. These include pulling all plant debris and roots from the medium and painstakingly raking and remixing the leftover soil or peat with sphagnum, perlite or vermiculite.

In other instances, growers may choose to grow hydroponically. Here, the use of clay aggregate or hardened expanded clay (HEC) pebbles may suit large-scale grow ops better. Hardened clay can be cleaned, sterilized and reused if done properly. Another popular option for commercial operations is rockwool, which comes in a variety of shapes and sizes. Rockwool, however, is very hard to reuse and presents the same security concerns as soil or soilless mixes when it comes to transporting and disposal. Still, given that most growers root their clones in rockwool plugs or squares and insert them into other mediums (such as soil or clay aggregates), rockwool is often present in the growroom in one form or another, especially now that clones are the predominant method for populating large gardens.

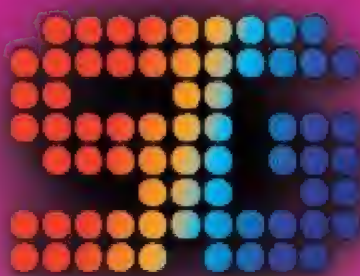
Nutrient programs in hydroponic systems that use either rockwool or clay aggregates can be tricky for the beginner or intermediate grower. These mediums require extra caution and constant monitoring, especially the pH and electrical conductivity (EC or ppm) readings. Most large-scale operations need huge reservoirs on the order of 50, 100 or even 250 gallons (and sometimes several of those). This makes mixing huge amounts of nutrients necessary and doubles the need for careful measurement and daily solution testing.

### FUNCTIONAL GROW OPS

For the functional grower who is raising small numbers of bushy, tree-sized marijuana plants, soil or soilless mixes are the most popular type of grow medium. Because large individual containers are typically used to pot the plants, soil and soilless mixes provide the best structure and consistency for growing large root systems.

Filling large containers with rockwool croustons or clay aggregate doesn't provide enough buffering for the feeding programs required to grow large plants—not to mention there's always a good amount of settling and compressing that occurs throughout the growing process, especially where plant rotation and shifting is practiced, and this can severely impact the growth and development of root systems and plants.

In functional growrooms where the number of plants doesn't exceed 50, the best method for watering and nutrient programs is to deliver the feedings by hand. Hand-carried tanks can hold gallons of nutrient solution and often have long hoses and wands attached to make reaching plants and their containers much easier. The type of nutrients depends largely on the grower, the genetics being grown and the system being used. In scenarios involving soil or soilless mixes, more aggressive nutrient programs can be deployed. Still, keeping your growroom as simple as possible—including the feeding regimen—is always the best bet for producing happy and healthy gardens. ✨



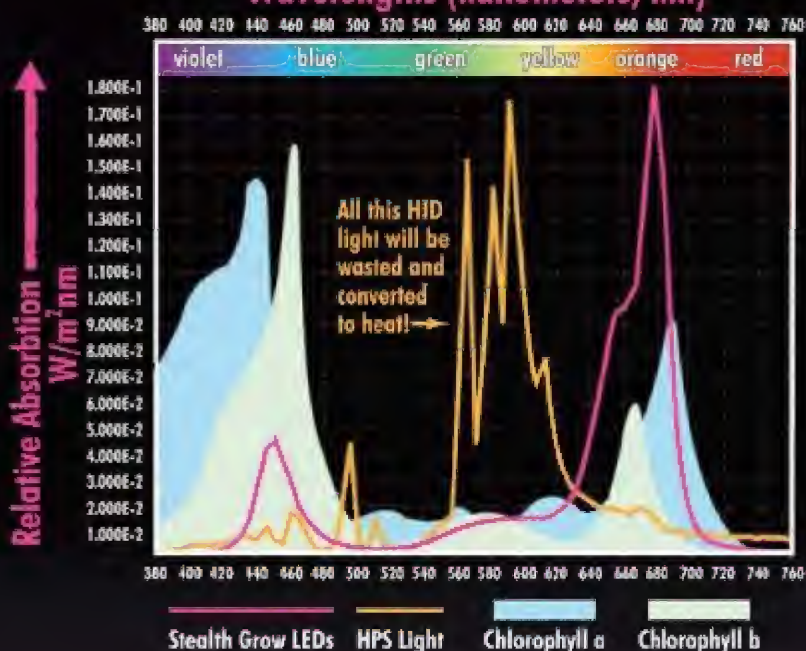
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# HASHISH!!!

Updated 2nd Edition by RED EYE Press

**Making professional-quality hashish requires in-depth understanding of its true essence. In this excerpt of the updated, second edition of Robert Connell Clarke's world-renowned book, *HASHISH!* you'll gain knowledge second to none—and hopefully, produce some sweet hash of your own. Enjoy!**

The first decade of the 21st century saw many refinements to the basic techniques of hashish-making explored in the first edition of *HASHISH!* What started in the 1990s with a small group of hashish experimenters has blossomed into a movement by producers and users of cannabis in the West who came to appreciate the purest of resin-gland isolates. Although dry sieving is more laborious, time-consuming and often less efficient, connoisseurs of the finest hashish still prefer dry-sieving techniques over the recently refined water process for isolating resin glands. However, water extraction has become the more frequently used process, mainly because it efficiently isolates resin glands from plant matter unsuitable for efficient dry sieving. In this edition, I provide readers with an update on contemporary hashish-making.

One of the most striking revelations in the past 10 years is an understanding that essential oils—the aromatic compounds in cannabis resin—contribute to the quality of the psychoactive experience. Until recently, essential oils were thought to be significant only in creating the varietal characteristics of taste and fragrance in the various cannabis strains. Varying cannabinoid content—i.e., different ratios of tetrahydrocannabinol (THC), tetrahydrocannabinol (THCV), cannabidiol (CBD) and cannabivarin (CBN)—was thought to be responsible for the particular psychoactive and medicinal properties in different strains. But 21st-century analytical surveys of domestic cannabis varieties (both medicinal and recreational) from Europe and North America revealed that in nearly all of the samples, THC was by far the largest component of the resin; only very small amounts of the other cannabinoids were present, all in concentrations below any threshold for physiological effect.

We now know that THCV is not psychoactive and may actually diminish THC's effectiveness. CBN is a breakdown product of other cannabinoids and appears in significant amounts only in poorly stored or old hashish, or in improperly dried and cured marijuana. CBD acts mainly to attenuate (as well as prolong) the psychoactive effects of THC, and although it's almost completely absent from the majority of contemporary sinsemilla varieties, a few

strains available at medical dispensaries now contain significant amounts—certainly enough to contribute to the patients' perception of CBD as being preferable for treating certain symptoms. CBD has analgesic, anti-spasmodic and sedative properties and is becoming recognized for its medicinal rather than psychoactive effects. Since traditional imported hashish from the Middle East is manufactured from strains inherently high in CBD, it often contains levels that match the amount of THC.

So what accounts for the wide range of psychological, physiological and medicinal effects experienced by users? During the past several years, thoughtful hashish researchers have determined that the aromatic terpenoids in cannabis resin modify both the psychoactive and physiological effects of THC. Many observant users now believe that terpenoids (and possibly other aromatic compounds) account for the subtle psychoactive variations induced by different varieties. Aromatic compounds may also determine the increased efficacy of certain varieties for a particular medical indication.

The highest amounts of aromatic compounds are present in the essential oil from the resin glands of freshly harvested, mature female flowers. As the harvested flowers and their resin glands dry, many of the most aromatic terpenes evaporate with the water, since these compounds vaporize at well below room temperature. Flowers dried under warm conditions will lose their fragrance much more quickly than flowers dried under cooler temperatures. Also, each step in processing allows more and more of these aromatic compounds to escape; as a result, even dry-sieved hashish has less aroma and flavor than the flowers from which it was extracted. The greatest loss of aromatic and flavor elements occurs when resin glands come in contact with water. Many water-soluble aromatic compounds (primarily low-boiling-point monoterpene alcohols) rinse away during the processing, making water-extracted hashish less complex and satisfying than dry-sieved hash. Consequently, water processing remains less popular than dry sieving among connoisseurs seeking to produce and experience the finest hashish.

No matter how the resin glands are collected, they *must* be dried thoroughly or the resin will spoil when stored at room temperature. Freshly extracted resin glands should always be dried in a dark and cool area to better preserve their flavors and fragrances. Another solution has been to store fresh resin by freezing, but this limits where and when it can be used. (Freeze-drying is an option that remains to be tried.) Despite advanced water-processing innovations over the past decade—i.e., ice-cold washing machines and water-sieve series such as Bubblebags and Ice-o-lators—the overall best hashish, as measured by potency, taste, aroma and ease of use, is still dry-sieved.

The cannabis varieties best suited for hash-making give up their mature resin-gland heads readily without much accompanying debris, and it is these large, mature gland heads that are preferred for producing high-quality hashish. Resin-gland stalks are extensions of the leaf surface, contain little THC, and (along with shattered plant tissue) dilute the potency. Other varieties are highly resistant to giving up their gland heads and never yield very well under any extraction procedure. Yields from dried inflorescences can range from less than 5 percent to nearly 15 percent by weight of nearly pure resin-gland heads—a more than threefold difference between varieties of

cannabis that, when smoked, seem to be of similar potency. This range within the “resin yield” offers cannabis breeders an opportunity to select high-yielding plants and use them to breed improved varieties specifically intended for hashish extraction. What an amazing future lies ahead!

Hashish produced from homegrown sinsemilla has steadily gained favor in the medical-cannabis community. Many users of medical cannabis are not marijuana (or even tobacco) smokers and seek medicinal relief via the smallest effective dose of THC ingested from the smallest amount of cannabis possible. The highly concentrated THC content of modern water- and dry-sieved hashish (up to 60% THC, compared to 20% in the best sinsemilla) makes it an ideal concentrated source of potent medicine, and one nearly free of contaminating debris.

This is not the case with hashish oils, however. The biggest problem with oils has always been residual solvent content. A disturbing recent trend is the “easy fix” method of cold solvent extraction with liquid butane. Butane



Female hashish inflorescence ripe for harvest with resin glands covering bracts.

### BEST-PIECE HASHISH

When producing a “best piece” of hashish, the quality of the starting material is vitally important. Mature sinsemilla flowers of a potent variety must be slowly and thoroughly dried (sometimes for weeks) before extracting their resin glands by either dry or wet methods. The flowers must be stored unpressed or the resin can’t be collected efficiently without increasing contamination by plant debris. Dry sieving in a cold environment (slightly above freezing) facilitates gland removal while shattering minimal plant tissue. Flower clusters must be crushed gently to release only mature resin glands; vigorous crushing releases more total resin glands, but it also introduces more diluting plant debris. By sifting gently, only relatively free-flowing, roughly spherical resin-gland heads fall through the sieve; irregular-shaped gland stalks and leaf pieces are left behind. The captured resin is then cleaned repeatedly over a smaller-sized dry sieve, preferably one with round holes. Yields of the highest-quality resin will be much lower, but the remaining plant material can be processed again using bulk techniques. Always keep in mind the golden rule of hashish making: The best is never the most!

Primarily to circumvent the time and labor involved with drying flowers and small trim leaves—as well as to preserve the terpenoid content of the resin glands—modern hashmakers may use an ice-water extraction of *fresh* plant material. Very cold water solidifies the soft resin glands, allowing them to be freed from plant matter without having to be dried first; the low-temperature extraction also preserves more of the fleeting aromatic terpenoids. However, resin glands dry much more slowly than their associated leaf and bract tissues, and this can pose severe problems for hashish processing, both wet and dry.

lighter fuel, the most commonly used solvent, is full of contaminants—some present due to inefficient butane collection and others added for their odor (to give butane an easily detected smell). These impurities and additives are slow to evaporate and can become trapped, readily contaminating butane-extracted hashish oils. Such impurities may be harmful when vaporized and inhaled. Carbon-dioxide critical-fluid extraction offers a solution here, but such specialized and expensive equipment has yet to be scaled down for home use.

My core message remains the same as when the first edition of *HASHISH!* was published: The making and use of hashish for a wide variety of reasons has been well known and accepted in much of the world for centuries. And as the techniques for making hashish have become modernized and improved, the resulting product is now much cleaner and more effective for recreational and medicinal uses. Our mission as modern hashmakers and consumers should be to adapt the best techniques and traditions of our forebears to our contemporary requirements and to discover new processes and uses. Most important is to appreciate the blessings that hashish has to offer. Above all, keep it clean—and enjoy!

## High-Tech Hashish Making

Excerpted from *HASHISH!*  
Written by Robert Connell Clarke,  
Mel Frank & Trichome Technologies

### Water Extraction

When it comes to making hashish, water extraction is both simple and the most useful procedure for growers without access to large marijuana fields for hand-rubbing or dry sieving. Water extraction works well at the “homemade” level (i.e., for small amounts of starting material), but it also scales up well for much larger projects.

Water extraction is popular because substantial amounts of hashish can be made from leaves and trim that might ordinarily be discarded. Large fan leaves have too little resin to be worth processing; growers use the smaller leaves, the trimmings left over from manicuring and any shake to make very potent hash—higher in potency than even the best hash available from present-day, traditional Middle East hashish makers. Water-processed hashish won't be as fragrant or flavorful as dry-sieved hashish, since many of the aromatic oils are lost, but this simple, straightforward process provides one important answer to that ever-present grower's question: “What should I do with all that leaf and trim from manicuring?”

Most of the needed tools and gear can be adapted from everyday materials found at home. In the method explained here, we used nylon-screen bags, also called cleaner bags, from the Pollinator company in the 50- and 150-micron pore sizes, but several layers of common materi-



First, presoak material in a basin so it doesn't float while agitating.



Next, mixer agitates leaf material in 150-micron bag while water temp is monitored.

als—such as cheesecloth, nylon scarves or sheer nylon stockings—can also be used with good results. Serious hashish makers might use five to seven cleaner bags of decreasing micron size to separate the hash into different gradations of nearly pure resin-gland heads. Three sources for cleaner bags in many sizes (as well as the associated supplies and equipment, sold both in stores and online) can be found at pollinator.com, bubblebag.com and aqualabtechnologies.com.

For this process, we used a 32-gallon barrel with its top cut off, two 5-gallon buckets (one with a lid and with its bottom cut out), a heavy-duty hand-held kitchen mixer with standard beaters (or an electric drill), a plywood piece large enough to cover the top of the 32-gallon barrel, a jigsaw to cut a circle in the plywood the circumference of a 5-gallon bucket, and a thermometer.

Maintaining a cold-water bath throughout the process is very important; the colder the water, the better the extraction can be. This is especially important when the plant matter isn't thoroughly dried before beginning extraction. You can use fresh leaf trimmings, but the wet resin extracted from them is extremely difficult to dry thoroughly; it's much better to start with dried material.

Water sufficient to nearly fill your large container should be refrigerated overnight, and lots of bags of ice should be kept on hand. In place of ice, a water chiller (like those used in large-scale hydroponic set-ups and aquariums) is an excellent alternative and was employed for this demonstration. Use a thermometer or temperature gauge to make sure the water temperature stays below 45°F (7°C). Continuous, gentle agitation for no more than 30 minutes in the cold-water bath is the key to maximizing yield while maintaining purity. Freed resin glands sink rapidly; the longer and more vigorous the agitation, the more extraneous plant matter will be freed and (along with the last few resin glands) sink to the bottom.

Here, given the large amount of material to be processed, the 32-gallon barrel was used to hold the 5-gallon bucket with its bottom cut out suspended through the plywood; the lip of the bucket held it in place (see the photos in Color Section CS16). The 150-micron bag was hung down, net-like, through the bucket and its outer edge tightly secured around the lip with tape. We had drilled holes into the bucket's lid to accommodate the mixer's beaters (though with smaller amounts, the entire process could be done in a 5-gallon bucket with a lid,



Bucket is poured through a 50-micron bag, catching resin suspended in water.



Resin mass still needs to be repeatedly washed in 50-micron bag.



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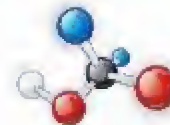
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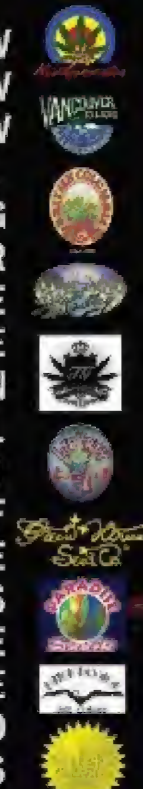
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Very pure water hashish indicates careful procedure and thorough cleaning of captured resin.

and the 32-gallon barrel and plywood wouldn't be necessary. Also, no lid is needed if you're willing to hold the mixer by hand for 30 minutes).

First, dried leaves and trimmings were soaked in a basin in very cold water for 30 minutes, during which we stirred the mass several times to ensure that all the leafy material got thoroughly wetted. After filling the 32-gallon barrel almost to capacity with water and getting it sufficiently cold, we placed the wetted material into the hanging 150-micron cleaner bag to about one-quarter to one-third full (any more would be difficult to process well).

After placing the beaters through the holes in the bucket lid, we attached the hand mixer (or drill) to the beaters, secured the lid atop the bucket, and then ran the mixer continuously to agitate the material in the cleaner bag. We used a drill with a long bit and beater attachment to occasionally agitate material in the lower reaches of the bag. After agitating the material for about 30 minutes, we would lift out the cleaner bag and remove the spent leaf material, add fresh wetted leaf, and repeat the procedure until all of the material had been processed.

Most of the resin glands and tiny debris that passed through the 150-micron screen settled to the bottom of the 32-gallon barrel. We emptied the barrel slowly by pouring the water through the 50-micron cleaner bag, which we held over the second 5-gallon bucket, capturing any resin glands still suspended in the water. Then we scooped the resin sediment mass from the bottom of the barrel and, after placing it into the 50-micron bag, washed it repeatedly with clean, very cold water to remove the smaller debris.

Recovered resin must be thoroughly dried; otherwise, it will spoil and may become moldy. Always remember: *Never press wet resin!* Instead, spread the resin out on an absorbent surface (such as layers of coffee filters on top of towels) in a *dark*, well-ventilated and very dry area for a day (or longer) until it's completely dry. While it's drying, periodically chop the clumps of resin into smaller pieces to expose new surface area so that all of the water evaporates.

This procedure can be added to and refined using several different screen sizes between 50 and 150 microns; the 50-micron bag can also be attached below the 150-micron bag to capture the resin directly. But the procedure explained here

(also see CS16) is the basic process for capturing a sizable amount of resin glands from material that is often discarded, and from which a very potent hashish can be made. Homegrowers who use this procedure generally wait until they've amassed a large quantity of manicured leaf trimmings—enough to justify spending several hours devoted to processing. You can store the dried leaf trimmings in airtight containers in a dark place or, for long-term storage, in a freezer.

For the frequent processing of large amounts, a washing machine can be used to automate



Various levels of micron bag resin drying after cleaning.



After drying resin is gently rolled into pieces of hashish.

the extraction process. Use a machine that has a manual drain—preferably one that also agitates in alternating directions. It's best to use a machine that will be dedicated to resin extraction or that was built for this purpose. Place the small buds and trim leaves into a large-mesh sack like an oversize tea bag (approximately 200 microns in pore size) to between one-third and one-half full, leaving ample room inside for the material to move freely. Fill the washing machine with ice and cold water and run it on a 15- to 20-minute agitation cycle. Remove the wet bag and allow the solution to settle for a few minutes. Drain the resin glands accumulated at the bottom of the washer drum into a basic-mesh cleaner bag (or into several bags that will isolate the resin into gradations by gland size). And there you have it!

Many present-day *charas* makers have begun to identify certain varieties of cannabis that yield much more resin powder than others, either by wet or dry sieving. This is because some strains emerge from the water-extraction process with more of their essential oils intact and yield a much more flavorful hashish (mmm ... yummy). So think outside the box and, above all, have fun! 🌿

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Bud brothers  
Damian Marley  
and Nas.

# DISTANT RELATIVES

An Interview with Damian "Jr. Gong" Marley and Nas. By Chris Simunek • Photos by Duke Lobos

A few weeks before it hits the market, *Distant Relatives*—the new album by Damian Marley and Nas—cranks from the speakers in HIGH TIMES' top-secret bunker, where a photo shoot has commenced involving the two stars and about a pound of foot-long colas. What might have appeared an odd pairing at first—the youngest son of Jamaica's reggae king and a hip-hop powerhouse from the streets of New York—turns out to click effortlessly. Recorded in LA with a real band, the album finds Damian and Nas meeting on an organic common ground between their two genres, while delivering what could prove to be the crossover hit of the summer.

When you look at the recent string of successes in both men's careers, it really starts to make sense. Damian Marley was the first reggae artist to win two Grammy Awards on the same night for 2006's *Welcome to Jamrock* (which features Nas guesting on the tune "Road to Zion"), while Nas has been topping the *Billboard* charts for over 15 years, most recently with his untitled 2008 album. Since the two were already friends, teaming their disparate styles wasn't so much an experiment as an inevitability.

*Distant Relatives* started out as an EP, then grew to a full-length album thematically centered on Africa. It's some positive-thinking stuff, and as we all sit down to talk, a chorus of female voices fills the air, singing: "My generation will make a change ...."

So tell me how the collaboration works between the two of you. I'm wondering how it all comes together?

DAMIAN: It's a process [between] the team of musicians that I work [with]—more of an organic process where we let the music lead us to wherever. Emotion ... the beats lead us. If we start something and we like it, then we follow that direction. Each song has a different story of how it started, but it is an organic, creative process.

How did you guys meet?

DAMIAN: Well, we met on tour for the first time in 1996. My brothers and sisters were also on the tour. And I was there watching.

You guys meet a lot of people, but you don't do records with all of them. What's the common ground?

NAS: I mean, I like what he talks about. I listen to his stuff, and I'm like, *Damn*—I never thought of that. Or like, 'I never thought of it that way.' He comes across with some shit that makes you think.

Tell me about the title, *Distant Relatives*. I assume that's about Africa being the birthplace of your ancestors?

NAS: It means just exactly what it say—you don't even have to look too deep into it. Because it's not just hip-hop or reggae, or just me and him, but that we are all related—the *human* family. Sounds corny sometimes when artists say some shit like that, but it's weird ....

I saw the promo video with Oliver Stone [part of the electronic press kit for *Distant Relatives*], and he's sitting there smoking a joint. How did that come about?

NAS: It's a very gangster situation—you know, good people vibing.

DAMIAN: We have a friend, and he is also a friend of Oliver's. This friend invited Oliver to come to Jamaica.

The War on Drugs has been used to incarcerate more black Americans than any other group in the US. I was wondering: Do you think there's a racist element to the War on Drugs?

NAS: I don't "think" there is, and "thinking" it, really—everyone *knows* there is. Everybody *knows* that, unless they're living in a world where they don't want to pay attention to what's going on. Or they don't care.

With Africa as the central concept of this record, can you tell me what it is about Africa that you're trying to say? What are some of the themes?

DAMIAN: The themes are from all different aspects of life—really not only to Africa, but to everyone. I mean, as you said earlier, the "distant relatives" and all of that relating to Africa—everyone's ancestors come from there, not just ours. That is a part of the theme of Africa within music, on many different levels. The album used many different instruments and rhythms. I think the reason why is, we need to have people to have conversations about Africa. We need awareness about Africa.

Did you learn anything about Africa doing this project?

DAMIAN: Lots of stuff. Lots of real situations.

Give me one.

DAMIAN: I read a book on what it was like to be a child soldier. Then I met someone that was a child soldier. That is something I got to learn a lot more about.

Do you see the attitude towards marijuana in this country changing?

NAS: Definitely.

Do you have any thoughts on that?

DAMIAN: In the first place, it is a little presumptuous for man to legalize it. But also, you will have a lot less youths who have a criminal record just for smoking a joint. You know what I mean—I worry a lot everyday just because I smoke herb. I wouldn't have a problem otherwise if I didn't have to worry about the herb. There are a lot of people who become criminals just for smoking herb, and it is unjust.



A bud in the hand is worth two in the bush.

# DAMIAN: I worry a lot everyday just because I smoke herb. I wouldn't have a problem otherwise if I didn't have to worry about the herb.

Our money says, "In God we trust," so outlawing the herb created by God seems to be a fundamental hypocrisy right there.

DAMIAN: From what I understand, some of the forefathers of the American government, George Washington and the others, grew hemp.

Have either of you ever been busted for herb?

NAS: Which time? I remember in the '90s, we used to smoke blunts outside more freely. Then Giuliani changed the streets of New York in a big way, where it became a serious police state. In a lot of ways, I can understand why—I mean, he definitely made the streets of New York a lot safer. But I remember the difference from everybody smoking in the streets freely to, in the late '90s, it was a serious problem. You know what I mean? So yeah, I've been getting harassed for weed for years. I probably had one incident in the past couple of years—but it hasn't been that bad.

Did you guys smoke herb when you were making the record?

DAMIAN: Of course! [both laugh]

Do you find it helps songwriting?

DAMIAN: Yeah.

NAS: Yeah, songwriting is like—it would be hard, but when you're smoking, you feel like you're doing the regular thing. Like it is right there with you, as a rhythm of your normal day. If I stop smoking, I think sometimes I can think in a different way. I don't know which one is better, smoking or not smoking, but when it comes to songwriting and writing some shit, the whole feeling is right.

You've both done a lot of collaborative work throughout your careers—I'm just wondering what is special or unique about this project.

NAS: What's special about the project? Well, for me and Damian, this is the first *album* that we [both] did with another artist. That was crazy, because I didn't know what to expect. You think it's one way, but you wind up finding out that it has its own way—that the songs write themselves. I think we had so many different ideas that we could have kept on recording for a longer time, just because of the ideas that were coming. And you're used to your own ideas ... but when you put them together, you got two brains. Two different sets of creative minds.

You both started playing music at a very young age. Was there a song or artist that made you re-



Where there's smoke, there's fire.

ally to want to be a singer?

NAS: Are we singers?

Musicians.

NAS: Tons. All different genres—it could have been everything from the Mary Jane Girls to the Jacksons to Sinatra.

You were listening to Sinatra in Queensbridge [the housing project in Queens where Nas grew up]?

NAS: Yeah, well, I sang his version of "New York, New York" when I graduated elementary school, so ... and other than that, "My Way." It was playing





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THE HIGH TIMES INTERVIEW

Herban Legends.



on the radio—somehow, some way, you heard that record. I actually named a song “My Way” on my *Lost Tapes* album ‘cause of that Frank Sinatra song I heard when I was a kid. So, you know, all the different kinds of music—you’d be surprised what kinds of music people are into. There’s all kinds of music that stay with me.

Have you ever smoked a chalice [the sacramental Rasta water pipe]?

NAS: Yeah. I like it. It is not the everyday thing. It’s like clean—don’t plan on driving after that.

Do you guys find that there’s a spiritual element to smoking herb, or is it just for kicks?

DAMIAN: No, there is a spiritual element to it. As you know, I am a Rasta, and it was a sacrament.

How about you, Nas?

NAS: Definitely—because the ancients smoked it, and they were historic figures. People all over, on every continent—that shit’s by Solomon’s grave. Everywhere. People before my time that I feel in tune with when I smoke sometime—there’s this thing that takes over, this Zen. It’s real right.

Is there any reference to herb on the album?

DAMIAN: Yeah.

NAS: Yeah.

Could you tell me?

DAMIAN: One is like, “I got the ganja. I got the ganja!”

**NAS: ‘Everywhere we go, we always seem to hook up with the right people. We love to hang out in that atmosphere.’**

I was reading some of the comments you’ve made regarding the album, and you say it represents change, which of course is Barack Obama’s key word. With Africa being the central theme of the record, I was wondering if that played into it at all?

DAMIAN: It is not so much about Obama as it is about the people who elected him. The people are ready for change; Obama happens to be the way they expressed that. The globe is reaching a stage of awareness right now through all kinds of communications.

When you’re touring, which cities have the best herb?

DAMIAN: Whichever city we are in, whatever we happen to bring.

Come on, there has to be more to it than that. There must be one city that you know has the *shit*.

NAS: Well, everyone knows that California is no joke. You got some good shit in New York, too. Everywhere we go, we always seem to hook up with the right people. We love to hang out in that atmosphere. ✦

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CO2, 600w HPS & Other Upgrades Available - Stealth Shipping  
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## PC Planter Hydroponics Grow Box

The PC uses 2 plants and a 50w HPS lamp and produces 1.5 pounds of dried plant matter per year.

- \* Dimensional 6.1" x 20.6" x 18.4" (NEMA1D)
- \* Light Panel and Complete Discrete
- \* Includes ventilation system (180+ CFM of air cooling)
- \* Includes reservoir with 2 plant capacity
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## Best Selling Super "Side-by-Side" Commercial Grade Hydroponics System 44-66 Plant - 6 ft x 6ft x 2 ft



\$3495 - 5 Pounds of Dried Plant Matter Per Month  
600w HPS/MH Oscillating Light System  
All-in-one Capabilities | Year Supply of Nutrients/Essentials  
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## Mini Cool Cab - 14 Plant - 3.5 ft. x 3 x 1.5 ft.



- \* 400w HPS/MH
- \* Digital Ballast
- \* Year Supply of Nutrients/Essentials & More

\$1595 - 1.2 Pounds of Dried Plant Matter Per Month  
CO2, RO Water Filtration & Other  
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## Super Locker 7 in 1 - 6-16 Plant 66" Tall x 14" Wide x 18" Deep

\$1195 - 1.2 Pounds of Dried Plant Matter Per Month

- \* 150w Full Spectrum High Lumen Bulbs
- \* SuperPonics
- \* Year Supply of Nutrients/Essentials
- \* More

Secure Ordering Line: 888-HYDRO-81



## Mini File Cabinet 5 in 1 - 6-16 Plant 27" Tall x 14" Wide x 18" Deep

\$495 - 1.2 Pounds of Dried Plant Matter Per Month

- \* 150w Full Spectrum High Lumen Bulbs
- \* SuperPonics
- \* Year Supply of Nutrients/Essentials
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The fishing boats of Greenwich Beach.



## THE ROAD TO ACCOMPONG

CONTINUED FROM PAGE 52 judge. In a recent interview, Blake had said that he was afraid the Jamaican police were going to kill him, but in the end, it was a heart attack.

Chinna says he has some business to do down on Greenwich Beach and invites Brian and me along. I throw my bathing suit on under my pants and head out. When we get there, however, I feel pretty stupid, because Greenwich Beach is a destitute little fishing village sandwiched between the Port of Kingston, with its giant cranes lifting shipping containers off the boats, and an oil refinery that belches out a constant billow of smoke that, when the wind decides to upset you, blows in your face. We're on the outskirts of the most bombed-out ghettos in the city—places where, despite the odds, men both righteous and not made names for themselves that are known around the world. Down the block is Trench Town, where Bob Marley got his start, and past that is Tivoli Gardens, where the Shower Posse got theirs.

Late last year, there was a chemical spill in the harbor. Three hundred tons of sulfuric acid poured into the water, killing thousands of fish, eating holes in the bottoms of Greenwich Town's fishing boats, destroying what was already a meager but honest trade here. Chinna grew up across the street in Greenwich Town and is planning a big concert in a couple weeks, hoping to pump some money back into the community. He's come to measure the ground for the stage and discuss the details. Of course, this takes several hours and a whole lot of domino games—not to mention some chalice.

Brian and I walk down an alley lined with rusted tin shacks that I believe are equipment sheds until Brian informs me that they are people's homes. Wooden boats are turned upside down at the water's edge, hand-painted, including one covered in red, gold and green, with the Lion of Judah on its side.

A Rasta comes up to us carrying a plastic jug of fish tea, which is just what it sounds like: a clear broth of salty brine. When he asks us if we're going to be in town for the concert, we inform him that, unfortunately, we're leaving tomorrow. The man pours us two Styrofoam cups' worth and tells us, as if answering a question we might have in the back of our minds, not to worry, we are welcome here. The man is fighting his own battle—no judge is ever going to force whatever company destroyed these waters

to compensate those who had made their living from them—but he paused long enough to offer us this delicious elixir, and I feel lucky and a little amazed at the hospitality I continue to encounter on this island.

I can't tell you the secret that makes Jamaica so different than any other place on Earth I've ever visited. I'm a

middle-class white guy from Long Island; what do I know? I suspect it has to do with character. On that note, I will leave you with a quote regarding character from a man who knew this island pretty well, the great freedom fighter Marcus Garvey, himself a descendant of the Maroons who had planted the first seed of resistance in its fertile soil so long ago:

"The chance of rising above the level of unfortunate men is for everyone who will ennoble himself by forcing out the good that is in him. What good you have in you, please bring it out. Nature never made you so soul-less, so character-less, as not to have some virtue that can be brought to the surface. Lazy, timid, awkward, character-less Jamaican, realize that you have something in you that is worthwhile. Search yourself and find it. It is a noble character that may mean a nobler life to be lived for the blessing of humanity. After reading this, make up your mind to come out of yourself and let the world know you and of you. You can do it." ✨



Marcus Garvey Lives!

# DISCOVER HOW THIS EASY WAY OF BOOSTING YOUR PLANT'S ROOTS GETS YOU **BIGGER HARVESTS!**

**Y**ou're about to discover how easily you can enlarge the power dimensions of your plant's roots and guarantee yourself bigger harvests with custom-designed microbially active supplements ...

These powerful supplements create ideal root zone environments better able to intake nutrients ... resist stress and diseases ... and your roots stay stronger because beneficial microbes break down old root material, providing nutrition while enabling roots to repair themselves and create new tissue.



*Root mass of tomato plants, same seed, same age, same number, harvested after 42 days of growth. Plants on left received VooDoo Juice.*

Plus, microbes help oxygen to penetrate more into your roots ... capture nitrogen ... and help pump more phosphorus into your plants.

The question has now become...what is the best way to install beneficial microbes into your hydroponics root zone?

To answer this question, Advanced Nutrients scientists conducted a multi-phase research project on a unique suite of beneficial microbes contained in VooDoo Juice. They discovered, when used as directed, VooDoo Juice provides:

- Faster-developing roots on your seedlings, transplants and clones
- Your roots have more branching, root density, root mass
- Increases in your root size up to 117%
- Faster, more efficient intake of nutrients, saving you time and money
- Your plants give faster growth, larger flowers
- Your roots are more resistant to heat, stress, drought, nutrient burn and other common problems.



## Fast Facts

### PRODUCT TYPE:

Beneficial Bacteria Root Booster

### GARDEN TYPES:

VooDoo Juice has been specially designed for use with all hydroponics, sphagnum, coco coir and soil growing mediums. VooDoo Juice has been developed for use with any and all hydroponic, aeroponic, drip irrigation, NFT, flood & drain, drip emitters and continuous liquid feed growing systems.

### WHEN TO USE:

Early Veg Phase, Early Flowering, Cloning, Transplanting, Growing from Seedlings

### MIXING DIRECTIONS:

Use 2 mL per Liter during weeks 1 through 2 of your flowering phase, and during weeks 1 through 2 of vegetative growth.

### GROWER EXPERIENCE

**LEVEL:**  
Hobbyist, Expert, Professional and Grand Master Growers

### COMPANY FOUNDERS' NO-RISK, 100% MONEY BACK GUARANTEE:

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*Jorge Cervantes*

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The Collectors' Edition Box Set also comes with a beautiful, full-color 48-page booklet that includes the behind-the-scenes story of these informative DVDs, plus a selection of Jorge's best articles for HIGH TIMES magazine. \$49.95



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*Bonus Features and Garden Outtakes*



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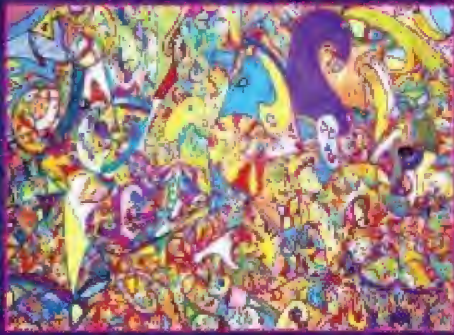
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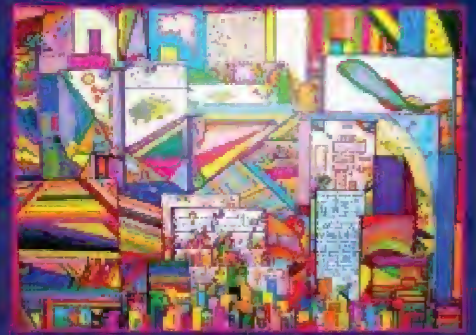
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# ELECTRICITY BASICS 116



**FLUORESCENT ESSENCE**

I have here my 220-watt T5 fluorescent grow with Nirvana Seed Bank's Snow White Fem, organically grown and fed using nothing but simple techniques. I got 7 ounces dried from this system with a five-week veg and eight-week flowering period (97 days from sow to harvest). I like showing people that you can get great yields off of T5s with the proper grow style. You don't need a 600-watt light to keep you medicinally happy for months to come!—D. Fresh & SeeM



**SHABBOS BOWL (above)**

Here's a shot of my peace pipe. Mazel tov!—Mauve

**FIRED UP (below)**

Hey, guys! Thought you could appreciate these pics of some amazing Sour D, Lemon Skunk and Cindy 99 in some pots I made just for the occasion.—Harrison



**KARMA CHAMELEON**

From the Big Island of Hawaii, taken during the unrelated tsunami scare. We have a different type of guard dog here, and he blends in well! Natural pest control and security against sandwich-pounding Fidel!—Dirk





# GROW MICRO BLOOM

IF YOU WANT THE BIGGEST, MOST COLORFUL, MOST AROMATIC, AND MOST IMPRESSIVE FLOWERING POSSIBLE, HERE'S HOW GRAND MASTER GROWERS FORCE MORE NUTRIENTS INTO

## High-Profit Plants, Incredibly FAST!

R.K. is a grand master grower of high profit plants from Santa Rosa, California. For over 15 years he used the same 3-part General Hydroponics fertilizer in his 20-light grow room.

But luckily, R.K. heard about a brand-new 3-part formula ... and ... he had a lot of clones he could afford to try a new fertilizer on. Although he was sceptical, he decided to test this new scientist-developed formula against the fertilizer he had been using for over fifteen long years in a straight up, head-to-head, growing test.

And the results amazed him ...

*"... Right off the bat, it was easy to see that my clones grew faster, they were greener and stronger, and they were ready for flowering about two weeks earlier.*

*"My bloom cycle was more productive ... I used less fertilizer overall ... and got better growth and yield. I guess I learned to keep an open mind and to always look for the best way to do something, not just the way you're used to. Now, Grow-Micro-Bloom (GMB) is the solid foundation for my 20-light garden!"*

### Why Big-Time Growers Of High-Value Plants Demand A Superior 3-Part Formula

While a premium 2-part formula like our Connoisseur is actually the most effective way to precisely dial in the exact nutrients and ratios your plants need ... many growers enjoy the simplicity of an easy-mixing 3-part formula ... and they still want the most effective formula possible.

That's why they demand only the best when it comes to:

- Using 3-part formulas specifically designed for their high-value plants ...
- Using formulas with the absolute best and most potent nutrients and ratios ...
- Using the most advanced, state-of-the-art, "carrier molecules" to ensure their plants get the maximum amount of nutrients in the least amount of time ...
- Using the formulas which have been proven, in multiple scientific studies, to get more color, more aroma, more size, and more potency from our plants ...
- And using formulas which are not only highly-advanced and easily customizable, but easy to mix and use ...

In fact, Grand Master Growers have found Grow-Micro-Bloom (GMB) from Advanced Nutrients is the only 3-part formula on the market which meets all these criteria. Here's why the others don't measure up ...

### The 3 Biggest Problems With Other 3-Part Formulas

If you've been growing for any amount of time, these three problems

will be very familiar to you:

**Big Problem #1:** Most 3-part formulas are NOT made for the types of plants we grow because you'll discover they're about the same as the little \$3.50 bottles of granulated fertilizers the average homeowner uses on their garden flowers. They're made in generic ways with generic ingredients.

**Big Problem #2:** Is directly related to the fact other 3-part formulas are not made for high-value plants like ours ... and that is ... they're hard to mix and monitor and are the direct cause of many of your plant growing problems.

Many include artificial dyes of an unknown amount and molecular structure which could harm your plants (instead of harmless, organic dyes) ... they don't have the right PPM or pH ... they burn roots ... they don't feed plants the right nutrients leading to slow growth and reduced harvests ... and they may contribute to other growing problems. The bottom line? They basically wreck crops and waste your garden's potential!

**Big Problem #3:** If you're using other, different, formulas ... even if ... you do manage to get a formula with nutrients which are good for you plants (which, as you've seen, most don't have) ... then ... you're probably still wasting most of those nutrients because those formulas don't have carrier molecules to drive those nutrients straight into your plants faster and more efficiently. This is actually a big problem because most of your nutrients are not getting into our plants which wastes your money ... and ... this causes longer crop cycles which wastes your time. But it doesn't need to be this way ...

### Here's How GROW-MICRO-BLOOM (GMB) Is Actually 5-Products-in-One!

The fact of the matter is: GMB offers you more value for your money than any other 3-part formula on the market and it's simply because you get 5-products-in-one with this formulation.

Here's how ...

- GMB now contains Wet Betty which is an organic surfactant that lowers the surface tension of your water, allowing easier spreading and uptake of nutrients into your plants.
- The second ingredient is humic acid which provides natural carrier compounds that transport nutrients and vitamins into your plants more efficiently, so they grow faster and have stronger cellular processes.
- The third ingredient is fulvic acid which gives you quicker nutrient absorption, nutrient transport, and more cellular metabolism. Together, these two acids work synergistically to maximize the time your plants spend in bloom.
- The fourth ingredient in GMB is the highly-potent bud-potentiating nutrients themselves that feed your plants exactly what they need for fast, high-powered growth and impressive finishing harvests.
- And the fifth and final ingredient is the specialized "chelates" we've already talked about that get these high-powered nutrients into your plants as fast and as efficiently as possible!

**COMPANY FOUNDERS' NO-RISK, 100% MONEY BACK GUARANTEE:** If for any reason you're not absolutely delighted, we'll refund all your money back it's that simple.



Advanced  
Nutrients



### GET HEADY

This strain is an all-organic Southern Lights grown from beans that I got in Toronto. It's an NYC Diesel/Sensi Star cross. The taste is delicious and strong, like lemon-lime mixed with fuel, and it has an uplifting sativa high that's borderline psychedelic. Hope my girls make it into the mag!—T. Headies

### FARM LIVING (above)

Hello, HIGH TIMES! MauveFarmer is here again to update you on my organically grown cannabis! Here's a picture of my Bubblicious plant in full flower. It's grown under a 600-watt HPS. I hope you all enjoy these beautiful pix!—MF

### COLA CLUSTER

Here is a photo of Blueberry from Dutch Passion Seeds at 42 days of bloom (about half ripe). Grown indoors and bio-organically.—Shovel-handle in Vermont





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MIGHTY MITE \$140.00  
SEA LEVEL \$140.00

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### NIRVANA

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**FORT CHRONIC**

Hello, HIGH TIMES! We are Best Buds Care, a medical-marijuana dispensary and care-provider service in Fort Collins, CO. Here's a picture from our garden that we wanted to share. We hope you like it. Thank you for your years of dedication! We've been reading your magazine for many years and are now medical-cannabis dispensary owners who help patients in need every day. Your pictures and articles keep inspiring us to do what we love!  
—BestBudsCare.com



**BACKYARD BONANZA**

I grew these in my backyard in pots, because my backyard is all cement and only about 12' by 20'. I ended up with 10 plants altogether—not bad for such a small area—and they turned out to be some killer weed. I couldn't have grown them without your help. I learned to do the best I could with what I have, all thanks to the articles and helpful hints in your magazine. So thanks, HIGH TIMES! Keep up the good work and keep the info coming. I love your magazine, and I love my weed! From your loyal reader and stoned friend.—Mark

Pix of the Crop is reader-driven. Your submissions make all the stoners of the world dream of kind nugs. Send pictures (no Polaroids), tips, questions and stories to: HIGH TIMES, 419 Park Avenue South, 16th floor, New York, NY 10016. Digital photos can be e-mailed to mailbag@hightimes.com and must be hi-res for publication. Remember, by submitting photograph(s) you thereby grant permission to the publisher to reprint photograph(s) in HIGH TIMES, as well as in any other Trans-High Corp. publication.

# SENSI BLOOM

## The Bodybuilding Secret That Gives Your Plants Bigger, More Potent Buds!

In the sport of bodybuilding, athletes supplement with amino acids to help fuel muscle growth because they're the essential "building blocks" on which protein growth is based.

But your plants can benefit from the addition of amino acids too! That's why the 4th ingredient in this one of a kind 2-part base nutrient is amino acids. These amino acids are the building blocks of proteins that fuel metabolic pathways for enhanced floral and essential oil production.

Ingredient #5 is, of course, the actual plant-maximizing nutrients themselves. But, you should know ...

## How To Get The Optimal Amounts of Micro and Macro Nutrients For a Bigger Yield

To ensure your plants get the most out of the nutrients you're feeding them, the scientists rely on chelation to enhance absorption. In fact, this 5-in-1 formula contains the optimum number of chelated macronutrients that your plants need for faster growth and bigger blooms.

In addition, the following micronutrients are 100% chelated: iron, zinc, manganese, molybdenum, copper, boron and cobalt ... which of course means ... your plants more easily absorb and use these nutrients—giving you bigger buds and more yield from the same bloom time!

## How This New Plant Growing Technology Maximizes Your Bloom Phase So You Get A Huge Harvest You Can Be Proud Of

This team of respected scientists and their graduate assistants worked around the clock to ensure this nutrient worked unlike any other:

- You get earlier flowering with more budding sites ...
- You get a shorter internode length and more buds per stem ...
- You get thicker diameter flowers with better floral structure because the powerful, pure ingredients feed your plants more effectively ...
- You get more time in peak bloom because your plants flower earlier giving you more weight, more aroma, more color and more potency ...

If they had stopped there, you would still have seen an impressive increase in your total yield.

However, in developing this advanced 2-part bloom fertilizer – Sensibloom — this team of scientists went the extra mile!

## The Ideal Ratios, Already Dialed In For You ...

It's a known fact that the further you move away from feeding your plants their ideal nutrient ratios, potency and yield rapidly deteriorate.

You see, your plants use a small amount of phosphorus during flowering, but what they really love to use is nitrogen and potassium. The scientists at Advanced Nutrients discovered this only after taking thousands of weekly tissue samples from buds, stems, leaves and roots of many varieties using gas chromatography analysis throughout all phases of plant growth.

Other nutrient companies are over-using phosphorus in hydroponic bloom fertilizers. And to compound problems, they use high levels of ingredients like mono ammonium phosphate (MAP) or diammonium phosphate (DAP). These substances are what give some plants their harsh taste.

But the good news is: with Sensibloom you're guaranteed to have the correct nutrient ratios for your plants!

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Here's the story: recently, a respected team of over a dozen plant scientists and graduate assistants discovered, after 109 man-years of research, how to combine 5 different plant improving formulas into one breakthrough 2-part bloom base nutrient.

What's more: you'll never have to worry about pH issues again because these scientists have completely eliminated the need for pH-PPM metering or even adjusting pH levels with their patented pH-Perfect™ Technology.

All this in effect means it is now possible for even the most inexperienced hydroponics rookie to start experiencing "pro level" juicy yields and buds!

## The "Secret" 5 Part Plant Maximizing Formula and How Science Ensures Get You Bigger, Juicier Buds From Your Plants Because of It!

Ingredient #1 ensures that the nutrients in this formulation get into your plants as quickly as possible. It's an organic surfactant called Wet Betty and it does something every plant grower wants ...

... Surfactants are wetting agents that lower the surface tension of a liquid (in this case, nutrient-rich water) allowing easier spreading and uptake of nutrients into your plants. Which of course means your plants will get the organic nutrients they crave faster and more efficiently than ever before — which greatly increases your plant's bloom yield.

Ingredients #2 and #3 are humic and fulvic acids. These organic acids give your plants an edge when it comes to growing quicker, stronger, and bigger ... with less stress ... than with any other formulation. Here's how ...

The humic provides natural carrier compounds that transport nutrients and vitamins into plants more efficiently, so your plants grow faster and have stronger cellular processes. In addition, the fulvic here gives you quicker nutrient absorption, nutrient transport, and more cellular metabolism. Together, they work synergistically to maximize the time your plants spend in bloom.

And ingredient #4 completes the package because it's ...

BY NICO ESCONDIDO

# EVERYTHING MEDICAL & MORE

Welcome to our mini-section devoted wholly to medicinal strains, news, uses, developments, activism, politics ... everything and anything, really, that is medically related to marijuana. This is your *Cannabis Clinic!*

## Lifetime Achievement for the Ages

As has become customary here at HIGH TIMES, when we happen upon the perfect candidates, we like to profile them in our Cannabis Clinic column as an example of all that is right and good in the world of cannabis.

Vancouver Island Seed Company (VISC) is one of the longest-standing seed companies in North America, and this occasion not only marks their myriad contributions to our industry and, more specifically, our cause, but also our deep sense of gratitude for their work in bringing us literally decades of fine cannabis genetics. We can honestly say that there are no finer people in the Cannabis Kingdom than the husband-and-wife team of Greg and Kat, the founders and owners of VISC.

Though they started the seed company circa 1993, Greg's been cultivating cannabis for over 35 years, and Kat has always been a large part of everything he did—probably more so than even Greg knew. After all, as the saying goes, behind every great man, there's an even greater woman, and Kat's gracious nature and talented eye behind the camera are an integral part of what VISC has accomplished. One look at the couple together and it's clear there's more to this partnership than just good medicine.

Greg and Kat exemplify what it means to persevere under a prohibitive political climate and the decades of unrest that have surrounded our sacred plant. Together, they've been a model and an inspiration to those of us who want to know exactly how people can raise a family and be responsible to their children (as well as their country) while practicing what some might call a form of civil disobedience. It takes a lot—not only

The Burmese, as beautiful as she is intoxicating.



## MEDICINAL STRAIN OF THE MONTH

### The Burmese

A fabled strain whose exact origin is unknown (but, as the name suggests, has been speculatively placed in or around the country of Burma—present-day Myanmar—or Thailand), the Burmese strain used medicinally today is largely of *sativa*-dominant lineage. What is known for a fact, however, is its ability to produce some of the sweetest-tasting smoke and uplifting highs out there.

While a lot of Burmese variants exist that were actually hybridized at some point to create seeds and perhaps a heavier-yielding version, there are still a few true lines out there that are close to pure *sativa*. These lines are excellent for both medical and recreational uses. Medicinally, the Burmese is used to fight anxiety, depression and, in certain cases, learning disabilities such as attention-deficit disorder (ADD).

The Burmese is an easy-to-grow strain and does well both indoors and out, though outside she can really strut her stuff and pack on heavy yields. The high is potent and quick—an especially popular characteristic among patients.

as growers or even parents, but as human beings—to stand up for what you believe in, to rise above that which is unfair or wrong and ultimately succeed. That's why we choose to honor Greg and Kat here as people and as friends, not just

as excellent marijuana breeders.

However, as far as their work goes, it's not enough simply to say that they're experts in the field of cannabis genetics. Greg and Kat have exhibited true care in the projects they undertake, living and

working on a mountainous island whose climate is often described as a temperate rainforest biome. That amounts to a unique, if not downright difficult, climate in which to grow—let alone breed—marijuana. But in the end, that's exactly why VISC excels, as the climate has forced them to make genetic selections that have resulted in some of the world's hardest, most durable and potent cannabis strains to date—strains that are bred to be resistant to mold, disease and a slew of outdoor pests, and which can yield *big* at higher altitudes.

Put simply, if you want to understand Greg and Kat's work, all you have to do is read their motto: "Grow and help the world grow, too."

**It takes a lot—not only as growers or even parents, but as human beings—to stand up for what you believe in.**

On a personal note, I'd like to relate one last sentiment. I first met Greg and Kat on one of my very first travel assignments for HIGH TIMES. I remember being particularly struck by their honesty, openness and hospitality—not to mention I was elated that, despite what some might call a "generation gap," our ideals lined up so perfectly that I wondered if our spirits weren't somehow intertwined from previous lifetimes or even some future yet to come. (And yes, I really had those thoughts.) But as a young man who already knew everything there was to know, I figured this was only the beginning of a long career at HIGH TIMES in which I would surely encounter plenty of other individuals who were just as right-minded and wonderful as Greg and Kat ....

Well, if there's one thing I've definitely learned over the past few years, it's that I don't know everything. Case in point: To this day, I have yet to meet anyone like this most beautiful duo. And believe me, I have met some truly astounding people—but no one has ever touched me the way Greg and Kat did that weekend up on Vancouver Island. Not even close.

Much love and respect to you and yours, Greg and Kat. We wish you the best. ✨

Got medical questions? Pass 'em over to Nico at [nico@hightimes.com](mailto:nico@hightimes.com).





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WHOLESALE INQUIRES WELCOME

# CHEEBA CHEESECAKE

Spring is in the air. It's time to stop and eat the flowers. By Ashley Boudreaux

This key-lime cheesecake is my culinary prostration to the divine bliss of springtime in New Orleans. The season's as fleeting as a tender honey-suckle blossom, and yet we revel in it; the temperate breezes under the chartreuse canopies of oak justify our toleration of brutish, damp winters and hell-on-earth summers. It affords inspiration in every quarter: Plants explode in riots of color, the sky is California blue, and the ever-present smell of dynamic decay gives way to the complex fragrance of life in renewal—if only for a short while.

America? We *are* your tropics! We live life at our own pace and are immutably tied to the very land that sinks beneath us. And if you haven't been here before, you should come in the spring, because no one has yet precisely articulated the incredible perfection of this place when all the heady, multitudinous layers of corporeal and spiritual sensation converge into one quivering, shimmering, ephemeral season.

This cheesecake comes as close as anything to capturing that sweet vibrancy. I found the inspiration for it on a perfect afternoon in an elegantly shabby 150-year-old Creole restaurant just off Jackson Square. On a crowded 19th-century bordello-style mahogany back bar was a bottle of Crème de Violette liqueur. When I asked the barkeep what the hell he could make with *that*, he handed me a gin-based concoction from 1916 called “the Aviation” (but he used lime instead of lemon). Bad things happen when I



The kindest cheesecake you'll ever eat.

drink gin, so I generally avoid it, but the drink totally matched my groovy lavender nail polish. It was the bright cacophony of spring in a glass, complex, fragrant—think delicately balanced margarita with a hint of flowers on the exhale and you're getting

close. The floral notes muted the juniper and melded to become something altogether different. I've been thinking about it ever since. Weird.

I wanted to re-create that moment of bliss in a morsel of food, and I was also ridiculously excited about doing something with violet liqueur, citrus and ganja—until I realized just how challenging it can be to acquire Crème de Violette. I can get my hands on some, but can our readers in Topeka, KS? I have my (nagging) doubts. But hey, if you *can* find some, toss it into the mix in place of the vanilla extract and then buckle your taste buds in for a hell of a ride.

Anyway, Crème de Violette aside, after much head-banging and tinkering, I came up with this cheesecake. The subtle interplay of the pinene in the ganja and the bright hint of key lime juxtapose brilliantly against the sweet floral notes of real vanilla, much like the juniper, citrus and violet do in the Aviation. That's because both marijuana and gin have a noticeable flavor profile of pine due to a terpene called alpha-pinene, and they also have a terpene found in citrus called limonene. Makes sense, right? Citrus + floral + pine = the perfect balance of springtime flavors.

If only the cheesecake matched my nail polish ... ✨

## FLYING-HIGH CHEESECAKE

### For the crust

- 10 grams quality ganja shake
- 1 stick unsalted butter
- 2 tbsp water
- 1 cup graham-cracker crumbs
- ¼ cup sugar
- 9-inch springform pan

### For the filling

- 16 oz cream cheese, softened to room temperature
- 1 cup sugar
- 3 eggs
- 2 tbsp key-lime juice
- 1 tsp real vanilla extract
- zest of 1 large lime

Combine butter, ganja and water in a double-boiler; cover and simmer on low for 45 minutes. Strain well and cool for 10 minutes—this should render approximately six tablespoons of ganja butter. In a large bowl, combine the graham-cracker crumbs and ¼ cup of sugar. Add butter and mix well with clean hands. Firmly and evenly press the ganja-butter/graham-cracker mixture onto the bottom and sides of a nine-inch springform pan. Definitely use one of those—mine cost \$5 new at the grocery store, and you absolutely need one of these contraptions in your life. Chill the crust in your freezer while you prepare the filling and preheat your oven to 300°F.

To make the filling, combine the cream cheese and one cup of sugar using an electric beater or food processor. Add the eggs in one at a time, then slowly add the key-lime juice, vanilla (or violet liqueur) and lime zest. Pour the filling into the chilled crust, cover with foil, and bake for 35 to 40 minutes at 300°F. Remove from the oven to cool, then chill in the fridge overnight. The next day, heat a butter knife under running water, pat it dry completely, and use it to quickly loosen the crust from the edge of the springform pan before unlatching it. Then drizzle the pie with honey and sprinkle with more lime zest. Stones 10.

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Times Square in New York City is a showcase for advertising and branding like no place else in the world. So NORML was both shocked and overjoyed when a major media company contacted us in January and offered steeply discounted rates to run a 15-second ad 18 times a day for a period of 60 days on the largest electronic billboard in Times Square.



Pro-pot billboards in the Big Apple.

After a quick scramble to raise the necessary \$15,000 in funding to create the ad and purchase the unique ad space under tight deadlines, NORML signed a contract and submitted the ad for approval to the billboard's ultimate owner, CBS Outdoors. And, as has often been the case in the cannabis-law reform movement, after *soliciting us* to do business, a major media corporation then developed cold feet right at the last minute. This happened for the umpteenth time when CBS rejected our 15-second animation extolling the virtues of actually controlling cannabis through legalization and taxation.

The reason that CBS provided to NORML for this decision: The company does not accept politically oriented ads. Miffed, NORML contacted some allies in the media, including HIGH TIMES, which broke the story of our being denied the ability to place an ad promoting cannabis-law reform by the same corporation that, on that very weekend, aired a controversial anti-abortion ad during the Super Bowl. Later, it was revealed that CBS Outdoors had also accepted provocative anti-abortion billboard ads in Georgia—and that CBS was ultimately responsible for pro-cannabis TV shows like

the popularly acclaimed Showtime series *Weeds*.

So much for not being political!

After NORML put out its own press release confirming CBS's rejection of the contract and ad, the political-action organization Change.org contacted us about placing a petition online to put some pressure on the company.

Within a few weeks, 10,000 concerned citizens contacted CBS and demanded that the company be consistent when it comes to accepting political ads. Public pressure—including threatened boycotts and media inquiries—soon brought CBS back to the bargaining table, where an agreement was reached allowing the ad to begin a bonus 80-day run in Times Square on March 14.

As part of this agreement, on April 20, NORML switched out the first ad for another 15-second animation highlighting the astronomically high level of minor cannabis arrests in New York City, where over 40,000 people annually face arrest and fines—and, shockingly, 90 percent of those pinged by cannabis prohibition in Gotham are minorities.

Many thanks to HIGH TIMES, Change.org, and the thousands of supportive citizens who contacted CBS and created a (hopefully) lasting change in the cannabis-law reform movement's ability to advertise through mainstream-media outlets, thereby educating the masses about the alternatives to cannabis prohibition.—Allen St. Pierre, Executive Director of NORML. Visit [norml.org](http://norml.org) or call (888) 67-NORML. To view the animated ads, type "Times Square" into the internal search engine at [norml.org](http://norml.org).

## FREEDOM FIGHTER

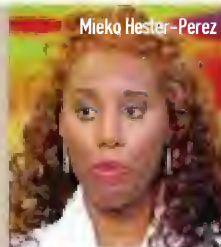
### MEDICAL MOMS Treating childhood autism with medical marijuana.

This month's Freedom Fighters are two mothers raising awareness of medical cannabis as a treatment for severe childhood autism.

Mieko Hester-Perez received national attention after being featured on ABC's *Good Morning America* as a parent who uses medical cannabis to treat her autistic son. At one point, her 10-year-old was dangerously underweight: "You could see the bones in his chest. He was going to die," she recalled on the nationally syndicated morning show. "My son had self-injurious behaviors. He was extremely aggressive ... he was a danger to himself and others." But a few hours after giving her son a cannabis-infused brownie, she saw a major change in his eating habits and behavior. "Marijuana balanced my son," Hester-Perez said.

In May of 2009, Marie Myung-Ok Lee revealed a similar experience, bravely publishing a long article on *Slate.com* called "Why I Give My 9-Year-Old Son Pot." Her son's illness was causing aggressive, even violent outbursts; he chewed holes in his shirt and suffered from other major debilitating behaviors. But the effects of medical cannabis, Lee wrote, were life-changing: "Since we started him on his 'special tea,' J's little face, which is sometimes a mask of pain, has softened. He smiles more." Months later, she updated the story with tales of her continued success using the cannabis treatment.

Lee also wrote: "It's strange, I've come to think, that the virtues of such a useful and harmless botanical have been so clouded by stigma." It's a stigma that has caused these two women to face accusations of bad parenting for "getting their kids stoned." Fortunately, both are now part of the growing NORML Women's Alliance, which you can learn more about by visiting [norml.org](http://norml.org).—Russ Bellville and Sabrina Fendrick  
Russ Bellville hosts NORML's daily audio podcast at [stash.norml.org](http://stash.norml.org).



Mieko Hester-Perez



Marie Myung-Ok Lee

## Ask Dr. Mitch



Dr. Mitch, You said a guy would have to smoke two pounds of pot to get a lethal dose. Has anyone ever done this?

G. Reaper

Hi G., The estimate for the lethal dose of any drug is an extrapolation from animal data, which means it's just a guess, and a fuzzy one at that. The point is that a dose of cannabis capable of killing someone from toxicity is far beyond what even the biggest stoner in the universe could ever smoke.

Do you think federal marijuana prohibition will end in our lifetimes?

H. Slingerman

Hi H., I think I'll actually get to tell my grandkids stories of cannabis prohibition, just like the ones my grandma told me about alcohol prohibition. Even so, we have to pitch in and spread the word wherever and whenever we get the chance. It's only going to happen if we donate to the cause, financially and otherwise. We've still got to do the work.

What do *sativa* and *indica*, the names for the two types of cannabis, really mean?

Thumb 420

Hi Thumb, There are actually three species of cannabis—the one barely anyone ever mentions is *ruderalis*, a short, shrubby plant. Many folks believe that *sativa* means "cultivated," but the poor high-school teacher who had to beat Latin into me taught that it also means "satisfied." *Indica* simply means "from India."

I heard that if a guy's mom smoked when she was pregnant, he'll have a lower sperm count. Is that true?

W. Jacoba

Hi W., It's true for cigarettes—at least three studies have shown that the sons of women who smoked cigarettes have various problems with their sperm when they reach adolescence. There hasn't been any work of this type done on marijuana.

Dr. Mitch Earleywine, Ph.D., is an associate professor of psychology at SUNY Albany. He is the author of *Understanding Marijuana and The Parents' Guide to Marijuana*. Got a question for Dr. Mitch? Email him at [420research@gmail.com](mailto:420research@gmail.com).

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# The Power to Change the World

The International SSDP Conference in San Francisco inspires students to fight for change.



Christopher Pezza  
at the 2010  
International SSDP  
Conference in San  
Francisco.

**'The most important part of a conference like this is the bonding that takes place between people from all different cultures.'**

process of getting involved in politics. Also, many SSDP chapters exist in communities with fairly harsh drug laws, and when students from these places get to see a medical-marijuana dispensary up close for the first time, it's like seeing pigs fly.

The conference schedule was rigorous, but the tone was positive and upbeat; it kept us active for nearly the entire weekend, and every moment was an incredible learning experience for me. In my opinion, the most important part of a conference like this is the bonding that takes place between people from many different walks of life. I had an idea of what to expect, but the reality surpassed my imagination tenfold. Picture 500 ecstatic young people sharing experiences and making friendships, all of them united by a common will to fight back against the Drug War. A common theme at the conference was that "the War on Drugs is a war on us." To many people there, it is simply inconceivable that such an irrational policy can be allowed to continue in this day and age—because to wage war against a society's youth is to wage war against the love and hope that are the future of this world.

SSDP members are volunteers, and the only profit we reap is the impact that we can have and the friendships we develop. The energy of people from so many different backgrounds uniting for a common cause—to reduce, if not eliminate, the social harms caused by the War on Drugs—is incredibly inspiring and has led me to one conclusion: This community has the power to change the world. ✨

*Christopher Pezza is the SSDP chapter president at Front Range Community College in Longmont, CO.*

I first got involved with SSDP in 2003, after I was arrested as a minor for possession of a small amount of marijuana and denied financial aid for college as a result. For young people involved with the cannabis culture (and discriminated against because of that), it often

seems difficult to make significant change. I was lucky to find a group of like-minded students at the University of Rhode Island; it was there that I discovered my passion and lost my activist virginity to Students for Sensible Drug Policy. One notable event that I participated in was a protest in which we served an eviction notice on the DEA at their office in Boston. Of course, such an action will seem ridiculous to some people, and yet it helped reveal to me the opportunities for communicating our points to the general public.

In 2004, I moved to Boulder County, CO, where, in the spring of 2009, I founded an SSDP chapter at Front Range Community College. Our chapter has worked for the past year to educate the student body about the significant harms caused by drug prohibition and how students can get involved in the legislative process while still having fun. We've also reached out to our local medical-marijuana community to learn the political perspectives of those working to allow patients access to cannabis as a medicine.

Then, along with two other members of the Front Range chapter, I was given a grant to attend this year's International SSDP Conference in San Francisco, which was held in March 2010. This was my first conference of any kind, as well as one of the most amazing experiences of my life. The SSDP community is unique in that we are composed of activists who are mostly between the ages of 18 and 25. The energy of this age group is exciting and enhances the

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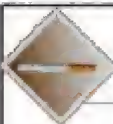
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# electricity basics

A serious look at powering your growroom. By Hugh Jiëlder



Good grow security starts with being smart and safe with your power.

## Start Here: Risk Management

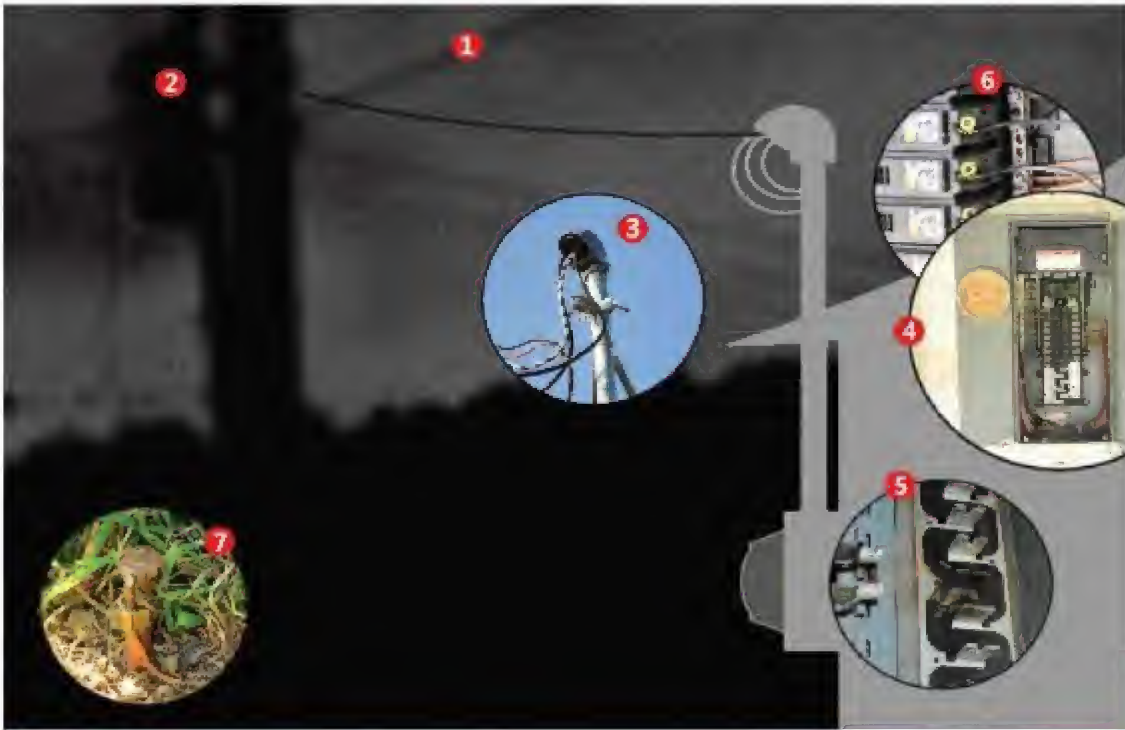
There is risk in everything we do. Although our minds often focus on particular risks that captivate us but pose little actual danger, our ability to survive and thrive depends heavily on our ability to recognize and deal with the most important risks. The good news is that the process of growing cannabis offers the possibility of strengthening a person's risk-taking skills. The key here is to view unexpected grow-operation snafus essentially as failures to focus on the proper risk. Any grower who learns to successfully maneuver through all the various unexpected problems that tend to plague grow ops can, over time, develop a keen sense for risk management, provided that he (or she) is organized, curious and eager to learn.

Given the extraordinary power consumption associated with indoor grow ops, electricity can never be too far from the top of any grower's list of concerns. Electrical codes exist to manage the inherent risk associated with such large-scale power consumption. In a way, all 890 pages of the National Electric Code represent lessons learned from American tragedies spanning more than 100 years. Strict adherence to the code will help growers to shift their focus from fire and electrocution hazards to all the other

non-electrical risks that growers take on every moment of their lives.

The most serious and successful growers out there know they have to make a choice: either learn the code themselves in sufficient detail to do their own certifiable electrical work, or cultivate a strong relationship with a licensed electrician. Since high-quality electrical work can cost thousands, some growers make the mistake of trying to short-change their electrician. They fail to realize that the electrician will consider their prior payment history when the grower makes an emergency request for help. Indoor growers should treat their electricians as if they have the power of God to shut down their operation in an instant—because they do. The frugal philosophy that keeps grow ops profitable can burn down houses and kill people when it's misapplied to wiring.

Only a select few growers will ever actually learn the electrical code. And yet, growers must possess a sufficient grasp of electricity to properly identify promising grow properties; to quickly diagnose the seriousness of an emerging electrical issue; and to fully appreciate the level of risk they're taking on at any given moment due to power consumption.



## What Is Electricity?

Over time, scientists and engineers have learned how electricity behaves. As we know from the mathematical models known as Maxwell's equations, if we could somehow see electrons, their collective movements would resemble the behavior of an incompressible, weightless fluid guided by material conductivity. Wherever this imaginary fluid accumulates, a pressure-like force tries to disperse it along the most electrically conductive paths.

James Maxwell discovered that positive and negative electrical charges can be mathematically represented as our imaginary fluid's sources and sinks. Materials with different susceptibilities to electricity and magnetism (also known as *conductivity*) represent the various available fluid pathways. In the absence of an electric current (i.e., movement), electrical conductors can be represented as regions of uniform "pressure" where our imaginary fluid is still. When this pressure builds, the presence of a nearby conductor can provide the fluid pathways necessary to permit a current.

This analogy works so long as the fluid cannot be compressed. In other words, every cubic centimeter of space always contains the same amount of this hypothetical fluid, no matter how fast the fluid is moving. If you can picture this invisible fluid when working with electricity, then you'll better understand how electricity behaves.

## Alternating Current

*Alternating current (AC)* is the rhythmic back-and-forth alternation of electric flow. AC is essentially a fluctuating *direct current (DC)*. This rhythmic flow can actually exhibit different resistances to the flow of electrons at different frequencies. To distinguish this dynamic AC resistance from the more static DC resistance, engineers use the term *impedance*. To give an example, a coil of wire will tend to resist the current more at high frequencies, whereas capacitors will tend to resist the current more at low frequencies.

It may seem unusual that the electric grid runs on AC, given that alternating current is far more dangerous to handle than direct current. But there's a reason for this: As it's transmitted, electricity loses energy in proportion to the current squared. In other words, the power loss will be four times greater if the current is doubled. Since power is the product of voltage and current, stepping up to high-voltage AC cuts the amount of current and therefore the amount of power lost. The fact is, were we to transmit the voltages we need to run our devices (120 and 240 volts) over miles of distances using DC, it would require such heavy wires that we'd go broke paying for all the copper.

### LEGEND: The following key will identify important components of electricity usage in the diagrams above.

1) Utility Power Lines: Long-range distribution lines run 4,600 to 33,000 volts AC.

2) Utility Transformer: Steps the voltage down to 240 volts AC.

3) Weatherhead: Where the utility's responsibilities end and the customer's responsibilities begin. This weatherhead is supported by bracing just in case something falls onto the line.

4) Breaker Panel: With cover removed; panels should be installed somewhere dry.

5) Evidence of heat stress on a breaker panel

6) Breakers: The silver bar of screws is the panel ground bar. Notice that the wires going into the breakers and ground bars are held in place with screws.

7) Copper Ground Rod Stake: One of these rods provide a

connection into the Earth for grounding purposes. The panel should also be grounded to any plumbing and electrical conduit.

8) Primary Junction Box: A large junction box is installed on the opposite side of the wall. All wires are run such that they can rest behind drywall.

9) Smaller Junction Boxes: Where wires must be joined together, code dictates the installation of smaller junction boxes accessible from outside of the drywall.

10) Conduit Maze: When wires are run outside of drywall, or within an industrial setting, they should be protected by metal conduit. Conduit raceways should never be filled beyond 40%.

11) Wire Sizes: Larger wire sizes are denoted by smaller gauge numbers. From left to right: 12, 10, 8, 6, 4 and 2 gauge wires.



## 120 vs. 240 Volts

Now let's look at the path that electrons take before they're turned into the photon fuel that your plants require to generate sticky buds. Along the way, we'll cover some specific issues that tend to pop up in grow systems.

In the United States, the electricity that feeds from the power utility's transformer to each house provides 240 volts of available voltage (which is your "fluid pressure"). You actually get three cables in the US: two 120-volt signals that are "out of phase," and a return path back to the utility for any unused residual power. Many appliances—including grow lights and ballasts—are more efficient and generate less heat in the 240-volt configuration, and this reduction in heat generally extends an appliance's lifetime.

Most homes today come with 100 amps of available amperage from the transformer. This is your "fluid flow potential," and it determines how many appliances you can run. (A typical warehouse, by contrast, might receive 400 amps.) As a reference point, a typical 600-watt, 120-volt ballast may consume around five or six amps; run at 240 volts, its amperage would be halved.

When it comes to discharging electrical current through the human body, there's an important difference between 120 and 240 volts. At 120 volts, the current will freeze the muscles through which it flows. If the circuit is through the arms, for instance, the entire upper body can become incapacitated; the heart may struggle to maintain its rhythm; and a person may have great difficulty crying out for help. Onlookers may not even realize that the person is being electrocuted, as his last facial expression will be frozen on his face. In this particular circuit, the feet may still be able to break the connection—

so if you're working with electricity and a person appears frozen, you should push him away from the wires by charging into him. 240 volts is more like an explosion: It can stop a person's heart and simultaneously launch him away from the site. Also, the cell damage from a 240-volt discharge is far faster and more extensive than with 120 volts.

## Wires and Breakers

From the power mast above a home, the electrons flow directly into an array of breakers within a breaker box. Breaker boxes are sized according to the power service supplied by the utility (100 amps, 200 amps, etc.).

Wires in an electrical system that heat up above the ambient temperature typically indicate a problem of some sort, a potential fire risk and even wasted electricity. (And remember that wasted juice is wasted money.) Also, undersized wiring can present a larger resistance to the flow of electrical current, which results in an undesirable voltage drop along the length of the wire. In a general sense, it's always safer to use thicker wire than the code requires, since such wire presents less resistance to the flow of electrons and, thus, less power is wasted.

Unfortunately, the undersizing of wire is pretty common in grow ops. Some growers will try to power a 1,000-watt ballast using thin 14-gauge wire. Over time, this can stress out a magnetic-coil ballast's capacitors. The thicker diameter of a 12-gauge wire has a lower, more appropriate AC impedance for such a load. Tables exist to help guide electricians on the copper-wire size necessary to keep a particular electrical current from heat-stressing the wires.

Heat stress can actually physically turn the

breaker or ground bar screws over time. This is problematic for another important reason: It creates a spark gap between conductors that electrons will accumulate at before jumping across. Loose connections make the voltage and current inconsistently available to appliances, which will damage them over time. The resulting arcing also damages the wire at the point of the spark gap. It's not uncommon for the plastic sheathing around wires to bubble and even hiss as it melts from the heat of the sparking. Heat-stressed wires must be replaced to be safe again, since their conductivity is diminished over time by the stress.

Breakers exist to automatically shut off the flow of electricity when the power starts discharging out of control. This prevents both fires and electrocution. Breakers will flip from either excessive line heat or excessive electrical current.

Breakers come in different sizes (15 amp, 20 amp, 50 amp, etc.) because appliances differ in terms of their safe electrical flow. For instance, 30 amps would be a typical peak-current rating for an electric dryer, meaning that if the dryer were to malfunction and start pulling more than 30 amps, the breaker would trip and cut off the flow. The sooner that a short circuit is registered by the breaker, the faster it can be shut off—especially in the event that a human body is the transmission medium. We've come to view the risks of AC as acceptable for the sole reason that breakers protect us from a never-ending electrical discharge.

What this means is that breakers must be sized appropriately for the devices (such as grow lights and ballasts) that are connected to them. Furthermore, if the amperage that we expect the appliance to conduct routinely exceeds 80% of the breaker's trip current, then the breaker will probably flip at random times even in the absence of an actual problem. And that, obviously, defeats our purpose, insofar as it makes any grow system unpredictable. After all, your plants would wonder what sort of crazy world you've created for them if the sun randomly refused to rise.

The electrical code also demands that wires running through a living space must be physically protected. For a residential setting, wires can be run behind drywall (but wherever wire junctions occur, there must exist a junction box accessible through the drywall). In more industrial settings—like a grow op—the code dictates that wires should be run through metal conduit tubing (a.k.a. "raceways"), which is typically accessible outside of the drywall. Since the conduit is always electrically grounded, it can shield the grower from an accidental discharge as long as the ground is good. Many growers make the mistake of overtaxing these conduit raceways, which causes them to overheat. Past 40% of their fill capacity, the conduit can heat sufficiently to actually trip the breakers.

Conduit is useful to growers because, once it's installed, wires can be removed or added without disassembling the conduit structure. Fresh conduit runs can even be added to existing conduit mazes in larger living complexes, usually without attracting any scrutiny, if the bending style and overall appearance of the existing conduit is sufficiently emulated.



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A typical magnetic coil ballast. From bottom left, clockwise: capacitor, igniter, power input receptacle and transformer coil.

## Magnetic-Coil Ballasts vs. Digital Ballasts

The older magnetic-coil ballasts are nice insofar as they're simple: Their components tend to fail in a typical order—namely, the capacitor, then the transformer and finally the igniter. This simplicity of design means that they're easy to service by the grower's electrician or even some grow shops.

However, magnetic-coil ballasts have a tendency to buzz or hum as they age. These ballasts contain wire-coil transformers that recondition the power into a voltage and current optimized for grow bulbs. At the factory, the transformer is coated with a shellac varnish, which is baked on in order to strengthen the magnetic coil and keep it from vibrating apart. Over time, this coating naturally degrades. To silence the buzzing that results, a grower has to either replace the transformer with an identical newer component, or have a shop that works on electrical motors recoat the transformer with the original shellac. A buzzing ballast isn't just a grow-light issue—it's also a potential security problem. Both neighbors and law-enforcement officers may misdiagnose a buzzing ballast as a source of dangerous electrical arcing. Growers who place the buzzing ballast onto flammable soundproofing material in an attempt to silence it can actually compound the risk of fire.

This is one reason why the newer digital (a.k.a. electronic) ballasts represent a revolution long worth having. It's a logical progression for the grow industry, as the added digital control has already led to useful computer-like functionality, more efficient operation and a more stable output. But the trade-off is that these units are not serviceable like the old magnetic-coil ballasts. In fact, some of them are actually encased in resin-like materials, as evidenced by their weight. Growers who switch to the newer digital ballasts should consider stockpiling spare ballasts and bulbs in case of failure, as malfunctioning ballasts will have to be sent back to the manufacturer for replacement.

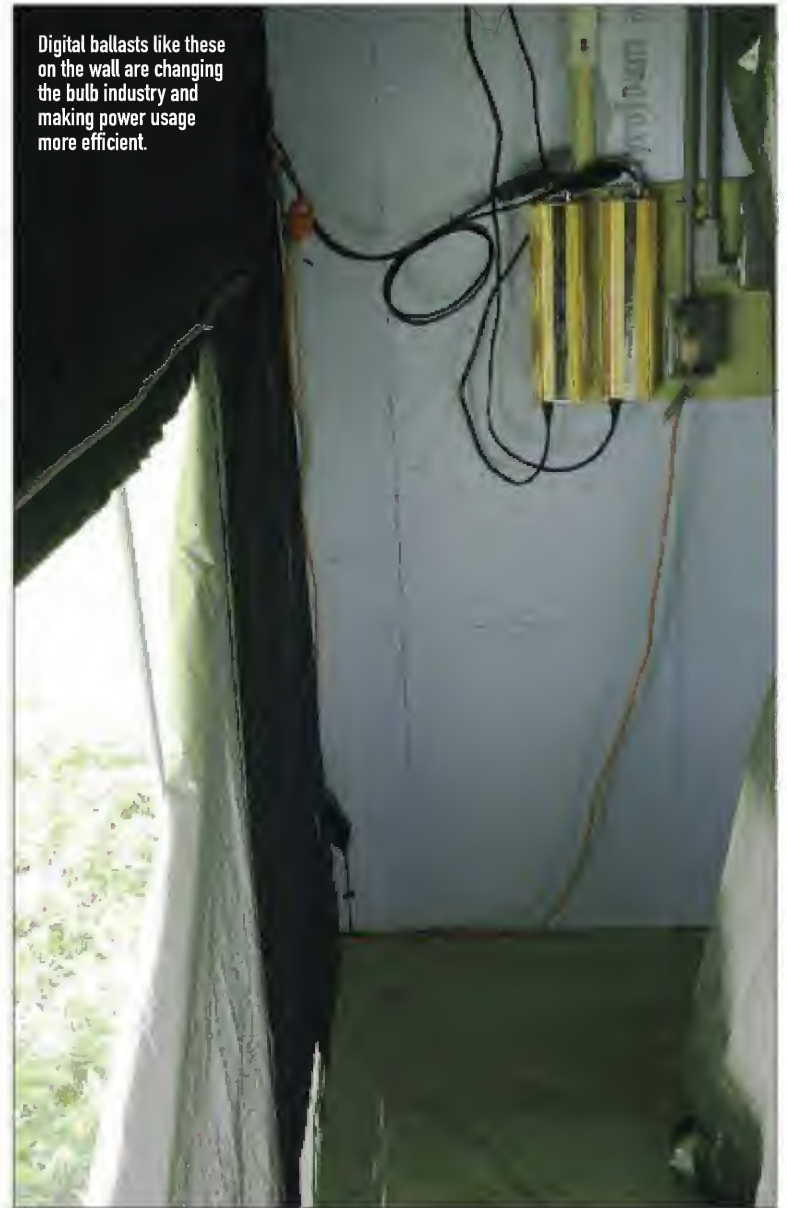
In their more efficient 240-volt configuration, electrons discharge through the ballast into a long copper stake that must be driven deep into the ground. Using the utility-supplied neutral return line as a ground for the newer digital ballasts will probably turn your pretty new gear into a bunch of expensive bricks. As a rule of thumb, with 240 volts, the Earth's ground must always be your neutral; there is no return to the power company!

Heated wires can lead to hot ballasts, but ballasts might be hot for many reasons. Stacking ballasts above one another can also do it, and so can a poor ground connection. If grounding is the most probable cause, the electrician will likely try to add a secondary ground as close to the ballast receptacles as possible.

In the same way that growers now use infrared laser thermometers to measure plant-canopy temperature, a smart grower will keep an eye on ballast temperatures using the same inexpensive device. Although ballasts will surely differ in their typical temperatures, a digital ballast operating at 140°F is probably too hot. By recording such data points in a log, the grower can better gauge the health of his (or her) electrical system.

## Bulb Problems

Growers should also use a light meter to regularly check bulb performance. Even if the meter isn't precisely designed to test a particular bulb, changes in bulb output can be observed by comparing these values over time. Since these levels will vary dramatically with distance and the ballast's warm-up time, the values should be recorded 10 or 20 minutes after firing up for a specific bulb-to-meter distance. Record the values in a log so that trends can be monitored. Dramatic changes in the lumens warrant a simple test: repeat the measurement after plugging the bulb into another identical ballast in order to identify the cause of the problem.



Digital ballasts like these on the wall are changing the bulb industry and making power usage more efficient.

## Electric Buds

At the point where the electrons are converted into photons, the electrical grid ends and plant biology begins. But don't make the mistake of thinking that the *electricity* ends there. Electricity is *everywhere*.

In fact, the photons induce a mirrored electrical current within the cannabis plant, which the plant then uses to generate psychoactive cannabinoids and terpenes. Cannabis users, in turn, ingest these molecules in order to stimulate electrical activity within their own brains. Since humans tend to preserve and promulgate those genetic strains that induce the most interesting or useful mental and physiological effects, there exists a fascinating (and by now quite mature) symbiotic relationship between the human and the cannabis plant that is mediated with the flow of electricity.

In a sense, growers make a living by converting store-bought electrons into positive human health, emotions and creativity. And so long as growers heed the electrical code that keeps this otherwise dangerous conversion safe, the process couldn't possibly be more beautiful to observe and understand. James Maxwell would surely be amazed by the things we've done with his incompressible, weightless fluid. ✨



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Healthy root systems look bone white with many root hairs.

**For huge harvests, create a root system below ground that feeds the massive buds above. Story & photos by Erik Biksa**

Massive yields from strong plants are made possible by large, healthy root systems and airy growing mediums. The rhizosphere (root world) does much more than just anchor plants—it provides the necessary substrate to deliver the water and nutrients required for healthy plant growth. Productive and healthy root systems occur in aerobic and biologically active environments. This means the roots, as well as the healthy microorganisms surrounding them, are living in an oxygen-rich environment. Root systems suffer in an oxygen-depleted environment because the biological life that surrounds them (said to be *anaerobic*) is not beneficial for plants.

Warmer temperatures are a common condition for indoor-growing environments. This actually cuts down the availability of oxygen at the roots, exacerbating anaerobic conditions that, combined with wet conditions, may produce plant diseases. The severity of the infection can range from a reduction in yield and quality to total crop devastation.

These infections occur because the conditions produce higher populations of anaerobic bacteria and fungi (bad guys) than aerobic bacteria and fungi (good guys) in the root zone. The rhizosphere is like a parking lot for microbes—there are only so many spots available, so if it's filled with desirable microorganisms, the bad guys won't have anywhere to park and stay. By introducing populations of highly specific, *beneficial* bacteria and fungi to the roots and grow medium, growers can ensure a healthier balance of microorganisms that actually assist the plants in several different ways:



Beneficial bacteria help roots process nutrients quickly and easily.



Voodoo Juice from Advanced Nutrients encourages good fungal colonization.

Bigger root systems are created because the beneficial microorganisms not only target the roots but also grow as an extension of the plants' own root system. This greatly increases the surface area for the absorption of water and nutrients to provide better growth rates and yield potential.

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of beneficial fungi and bacteria. The species are specially selected for their ability to attack and consume the unfriendly microorganisms that infect and destroy roots rather than symbiotically assist them.

Different fungal and bacterial species perform a wide range of beneficial functions, including the production of natural growth hormones and enzymes, protein synthesis, the production of vitamins for plants, and improved nutrient availability.

The super strains of bacteria and fungi produced by Advanced Nutrients' laboratories are the result of a careful process to determine which microorganisms perform best for cannabis growers. From there, a subspecies is isolated once it's been shown to outperform others within its own species. Finally, the isolate is reproduced, concentrated, and held in a state of suspension until it's diluted and introduced to the plants' roots via waterings.

After the application of products like Voodoo Juice, Piranha and Tarantula containing these super strains of beneficial bacteria and fungi, the differences can be seen in your plants within 48 hours. Once colonization begins, plants appear more vibrant, growth rates are increased, and the root system is visibly larger and surrounded by the fuzzy white hairs that are formed as a part of this beneficial relationship.

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BY ERIC SCHONER



### GREENER GLASS

With all the new *green* products appearing on the market these days, you may find yourself asking, “Where’s the eco-friendly smoke gear?” Well, if you’re tired of inhaling the potentially harmful chemicals left over in your favorite bowl or bong, **Green Glass Cleaner** may be just the thing for you. This all-natural and environmentally friendly cleaner will make hitting your favorite piece (whether glass or ceramic) as smooth as the day you bought it. Available in both 8- and 16-ounce sizes, Green Glass Cleaner is a highly useful product for any avid smoker.

*Price: \$9.99 + shipping (16-ounce)*

*Contact: Green Glass Clean, [greenglassclean.com](http://greenglassclean.com)*



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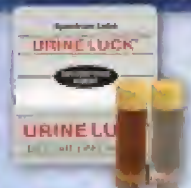
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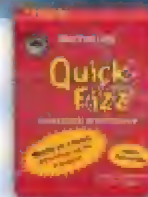
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### HOW MUCH WATER?

How often am I supposed to water my pot plants, and when do I start adding liquid nutrients to my solution?

*Anaheim Angel*

Dear AA,

Plants need to be watered differently based on how old they are and how much of a root system they have developed. Young plants with a smaller root system require less water more frequently, while larger, more established plants need a full soaking every day. Flowering plants also take up more water than vegetating plants in order to supply enough fuel to build buds.

If you're using containers, one good rule of thumb is to pick up each individual container after watering to get an idea of how it feels when full. Then, once the first few inches of mix at the top have dried out, pick it up again to get a sense of the container's weight without much water. Eventually, you'll be able to tell exactly which plants need water (and how much they need) and act accordingly.

As for nutrients, plants in soil mixes can usually go a few weeks with plain water before you'll need to start adding vegetative nutes that are higher in nitrogen (N). Hydroponically grown plants will need at least a mild nutrient solution

from the moment they show roots. Once you've decided to flower your plants (soil or hydro), you'll need to start adding flowering nutrients higher in phosphorous (P) and potassium (K).

### SHORT SEASON

What's a good strain to grow here in the drier foothills of California? Our season ends sooner than everywhere else.

*Evan R.*

Dear Evan,

Your best bet is to go with an *indica*-dominant plant with a flowering time of 60 days or less; however, you can also find some nice *sativas* that will finish before the frost sets in. Most strains are a hybrid of the two types that should finish in time for you to harvest. However, you should avoid strains with "Haze" in their name, as these plants typically grow wispy and take a longer time to mature than you can afford with your altitude and weather.

### WHAT SPECTRUM?

Should I change my light spectrum during the vegetative stage? If so, what would you recommend?

*Sean T.*

Dear Sean,

With high-intensity discharge (HID) lighting, most growers recommend metal-halide (MH) lamps during the vegetative stage and high-pressure sodium (HPS) lamps for flowering. However, don't let this discourage you from growing if you have only one type of light; I've seen great harvests pulled off by people using either one throughout the vegetative and flowering stages.

The most important thing is to provide your plants with enough light. Once you've gotten a few indoor seasons under your belt, you can begin to explore the options of using separate spectrums and even mixing them for more optimum growth. In the meantime, focus on providing enough lumens throughout all of your plants' growth stages to produce fat, sticky buds. Good luck!

### SASQUATCH SINSEMILLA

I once saw a cannabis "tree" on a Spanish website that was able to produce about 25 kilos of flowers! I haven't been able to find this monster again no matter how many hours I spend on the Web. Would you please give me some information about this in order to develop some examples for a liberalization project in Uruguay? Thanks in advance. Regards,

*Rodney A.*





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Damage from spider-mites looks like tiny white dots on leaf tops.

Dear Rodney,  
Sounds like a tall tale to me: 25 kilos is 55 pounds, and that's an extremely large amount to harvest from one plant—much more than I believe is possible. On the other hand, I have seen many different strains produce up to 10 pounds (4.5 kilos) of dry buds when grown in full sunshine with the proper care and feeding.

On a recent trip to Northern California, I witnessed many of these marijuana monsters in various organic gardens. The plants were started indoors and transplanted outside as big bushes already, so they were able to grow into huge outdoor trees. They were also foliar-fed with aerated compost tea in order to boost their metabolism and growth.

### WHAT MITE I DO?

Danny, I'm about to lose my mind! I've found spider mites on my beloved Sensi Star mother plants, and I don't know how to get rid of them—I've already attacked them with three different types of spray and brought in ladybugs as well as predator mites. After a few weeks, they always come back and seem even tougher than before, if you can believe it. I don't want to go nuclear (a.k.a., drop a toxic fogger bomb), and I pride myself on organic methods, but I'm at the end of my rope. Please help!

Compost Tim

Dear Tim,  
Sounds to me like you're running out of options. Your plants may be just too bushy, with enough hiding spots for the tiny mites and their eggs to survive your attacks and regroup. Instead of dropping the bomb, you may have to take a few

cuttings, kill the moms and start over in a sterilized room.

Once you're sure the clones you've taken from the moms have rooted, get rid of the infested plants, all the soil, and everything else in the mother room where mites could hide. Then make a bleach solution (10% bleach, 90% water) and go to town with a mop, covering every possible inch of surface area in the room with it (after removing the lights, ballasts and any other equipment, of course).

Also, dunk the cuttings frequently in a mild organic miticide solution such as neem oil and water and make sure they're free of mites before introducing them back into your grow space. With a freshly sterilized room and fewer places for these pests to hide, you should be able to stay mite-free—or at least control their population—for years to come.

### SALTY DOG

I just started clones in an 18-gallon tote using Clonex clone solution. Now I'm getting a white residue on the lid and clones. The pH level is good, and the problem looks like a salt buildup. I used 150 milliliters of Clonex and 8 gallons of water. Am I doing something wrong?

Heather

Dear Heather,  
You're correct that the problem is a salt buildup, but it's not directly being caused by the Clonex solution; I suspect you're using "hard" water for your cloning purposes. Hard water, which contains sodium and heavy metals, is more likely to build up alkaline salt deposits on your lid and clones. Use purified or distilled

water as the basis for your cloning solution and you shouldn't see any more salty residue buildup. Also, use cold water and let it rise to room temperature instead of using hot water and letting it cool—hot water contains more rust as well as sodium and calcium deposits and sediment.

It also sounds like you may have a low humidity rate that, in turn, will lead to more evaporation in your reservoir. Bring in a humidifier to raise the level of water in the air and put less stress on your cuttings as they root.

### SPROUT AND ABOUT

I'd like to know what's the best way to sprout seeds? I've tried using moist napkins in a Ziploc bag in a dark, warm area. That worked for a few seeds, but with most of them, the root started to come out and then turned to mush and deteriorated (due to too much moisture, I believe). I've been told that to toughen seeds, I should freeze them and then thaw them out several times, but I haven't had any luck with this. I only have a few seeds left of a strain I'd like to start, and they're not feminized, so I'm in a pickle. I would like to know what method you've found that has the most success (i.e., without the risk of the seeds drying out or being too moist and the root rotting off shortly after sprouting?). Thanks!

*Mysteries in Michigan*

Dear MM,

The easiest way I've found to sprout seeds is to plant them directly into the mix you plan to grow them in. If you're using a soilless mix, simply wet the mix until it's moist and then poke a hole (about half an inch or so). Place the seed in the hole and then tamp it down, making sure it's covered and surrounded by moist mix. Within a few days, a seedling will appear already firmly ensconced in its growing medium. This works the same for rockwool or coco growers as well.

### GROW-ROCKS FOLLOW-UP

I read your answer regarding "Cleaning Grow Rocks" in the April 2010 issue, and I'd like to add a few of my techniques to your informative advice. I like to boil my grow rocks in water for a good spell, all the while ladling the stones around to remove stuck-on debris. After straining the stones and giving them another rinse, I repeat the whole process until they're as clean as possible.

Secondly, this should be done even with brand-new stones fresh from the bag, to remove the residue that builds up on them from rubbing together during the shipping process. (Don't believe me? Then put some into a clear glass of water and you'll see for yourself why you wouldn't want them in your system without a good rinse.) My personal rule of thumb: When I feel satisfied that the rocks are clean, I give them one more rinse just in case. You can then use the dirty flushed water in your yard on plants, trees and lawn.

Thanks for everything you do and keep up the good work!

*Pea-Gravel Boiler*

Dear PGB,

Thanks for sharing your cleaning technique with our readers! Hydroponic growers who don't want to clog their pumps and dripper systems are ad-



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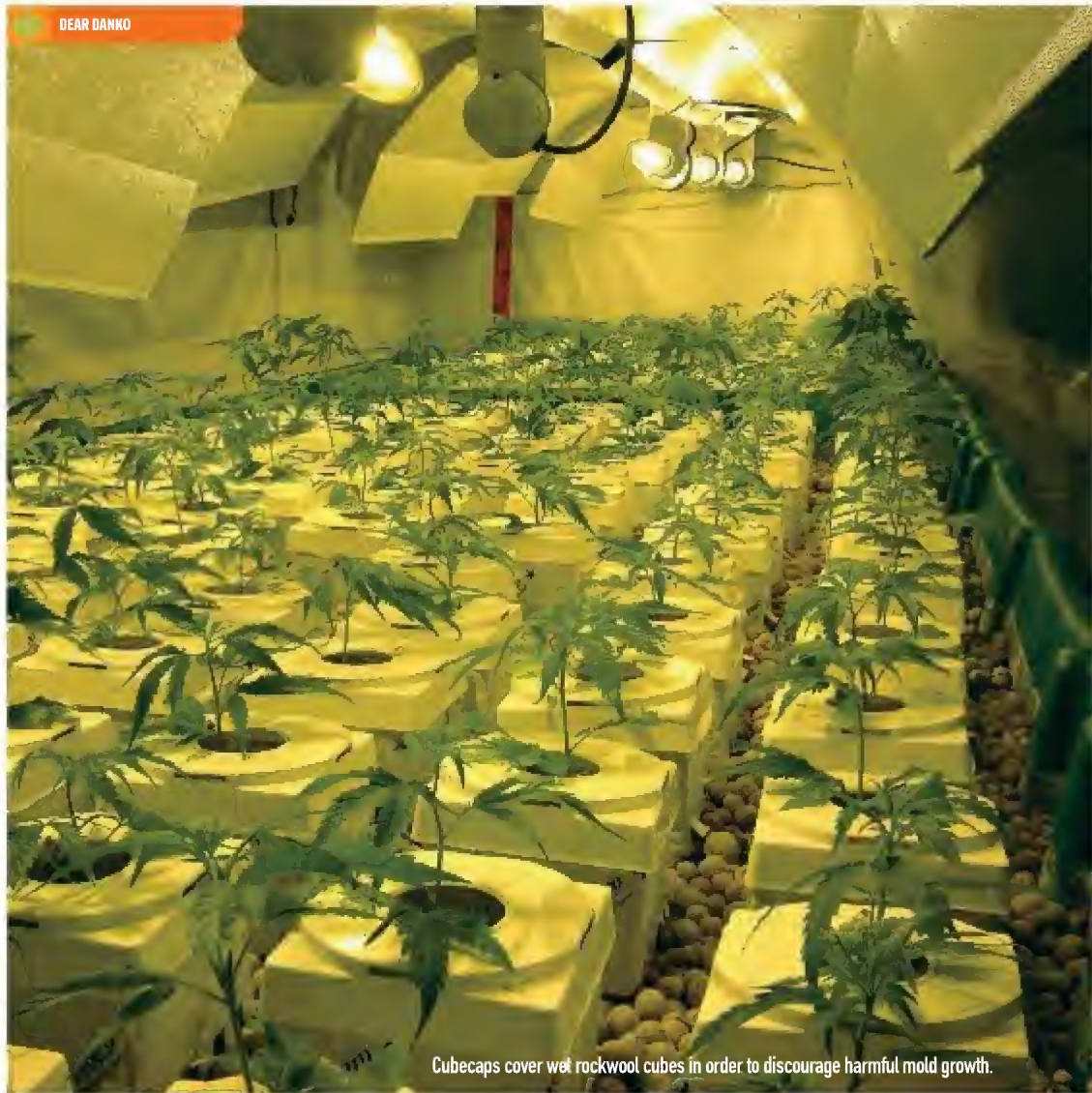
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DEAR DANKO

Cubecaps cover wet rockwool cubes in order to discourage harmful mold growth.

vised to always soak and rinse new grow rocks until the rinse water runs clear. When recycling those rocks for multiple uses, boiling will help loosen organic material from the surface and the interior of the rocks, as well as killing off any bacteria or pathogens that may have been present in the earlier system.

**ALGAE AWAY**

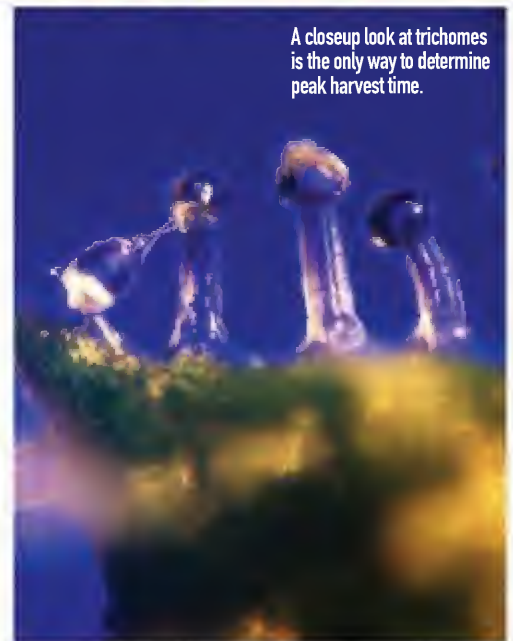
My rockwool slabs keep developing a slimy green algae on them. Is this bad for my plants and their roots, and if so, how can I get rid of it? Thanks!

*Green Envy*

Dear GE,

Contact with water and light is causing the algae to grow on the surface of your slabs. The problem is that the algae and your plants' roots are now in competition for many of the same nutrients, so this is robbing your plants of some of their food. Also, the algae can eventually cause problems for their supporting stems as well as induce fungi. It also provides the perfect breeding ground for annoying fungus gnats.

Depriving the rockwool of light is your best solution to this problem. You can either create your own covers using tinfoil or some other kind of opaque and waterproof material, or you can purchase products designed for this purpose, such as Cube Caps (cubecap.ca), plastic covers that come in a variety of sizes (3-inch, 4-inch and 6-inch). The company even has new Drip Caps made specifically for individual drip systems.



A closeup look at trichomes is the only way to determine peak harvest time.

**FLOWERING TIME**

I've been growing and reading HIGH TIMES for nine years now, and I've always wondered if flowering time starts when you induce the 12/12-hour light/dark photoperiod, or does it begin when the plant has started shooting out hairs? Your loyal reader,

*Jon C.*

Dear Jon,

Flowering time begins on the day you induce flowering by cutting the amount of light in your cycle from 18 hours or more to just 12 hours

COURTESY OF CUBECAP. COURTESY OF GREEN HOUSE SEEDS

per day. Therefore, if your plant has a flowering time of 56 days, you should expect to harvest eight weeks from the day that you begin this light cycle.

Keep in mind that different phenotypes mature at different rates, so you may have to determine your harvest date using a magnifying loupe instead of a calendar. The flowering times listed by seed breeders are estimates based on previous results, and unscrupulous breeders will even list shorter times in order to market their seeds to impatient farmers. Also, setbacks during the growing process can lengthen the amount of time it takes for a plant to mature.

Always determine your particular harvest time based on your observation of the gland heads on the trichomes. A close look can determine the exact point at which these previously clear heads begin to turn cloudy, indicating true ripeness.

### FROSTY FREEZE

Recently, you answered a question from a Montana reader by stating that cannabis will not tolerate frost. It's true that many varieties suffer in cold weather, but some of us growers have selectively and successfully bred plants that can tolerate the cold.

I've harvested plants high up in the Adirondack Mountains (the coldest place in the continental US) right through October and into early November. What's worse than frost is damp weather above freezing, which promotes mold.

Here's my way to determine which plants are the hardiest for cold weather: Start with *indica*-dominant genetics and plant your seeds as soon as the ground thaws around April. The warmer days and cold nights will give you an early indicator of hardiness. When they begin flowering in early July, remove (by cutting off with scissors—don't uproot!) any but the most vigorous females and the best males.

By late July, the females will be well pollinated and the males can be removed as well. Starting in September, start picking the seeded buds as they ripen (*not* whole plants). If you leave a few lower branches to go as late as possible, you can easily determine which plants will be the hardiest from your seeds. Hope you'll pass along this tip!

Swamp Boy

Dear SB,

Thanks for the tip, though I have yet to see a cannabis plant that can survive more than just a very short period of frost. I feel for farmers high in the mountains or in extreme northern climates, who have to worry about their pot plants freezing and dying before they reach maturity. Anything we can do to make our cultivars more tolerant (without sacrificing potency and odor, of course) is a step in the right direction in my book. Luckily, we're working with an already hardy plant that's been able to spread itself from the highest mountain ranges to some of the lowest desert regions on Earth. Growers should always remember to tailor their strains and techniques to their unique region in order to maximize their harvests. ✨

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Each year, HIGH TIMES rolls out the honors for the most Significant Technological Advances in Secretive Horticulture. Our Cultivation Department has scoured the planet, visiting hydroponic shops, cultivation-industry trade shows, state-of-the-art indoor horticultural labs and remote guerrilla ganja farms, always in search of the best new equipment to ease your burdens and increase your harvests. Find out which products made the grade in 2010.

### THREE EASY GARDENS

Start growing now with this incisive cultivation report geared to beginners looking for the best options. Learn the pros and cons of soil versus hydroponics, and check out three easy setups that will get you up and growing quickly, safely and simply.

### ORGANIC PEST CONTROL

In the second installment of this year's pest-control series, we focus on organic ways to defeat insects and diseases in the growroom. Hugh Jielder covers a wide range of scourges, including spider mites, powdery mildew and bud rot, offering growers the best ways to prevent, contain or eradicate these pests safely and efficiently.

### SMALL-SCALE GREEN REVOLUTION

Visit a sleek indoor cannabis garden designed using the principles of industrial agriculture, including tips and tricks you can apply in your own growroom.

### INSIDE THE MEDICAL-DISPENSARY SCENE

Is California really the "Wild West" of medical marijuana? A more objective look reveals that our entire national health-care system could learn a lot from the very best medical-cannabis dispensaries in the Golden State.

### KENTUCKY FRIED STORY

Managing editor Natasha Lewin goes southern on her down-home visit to the Blue (and green) Grass State. Meet the four-time gubernatorial candidate Gatewood Galbraith, a pro-pot activist and Friend of Willie, and bet the farm on the Kentucky Derby.

### HURRAY FOR HUGHLEY!

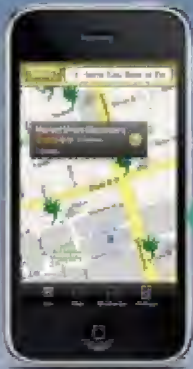
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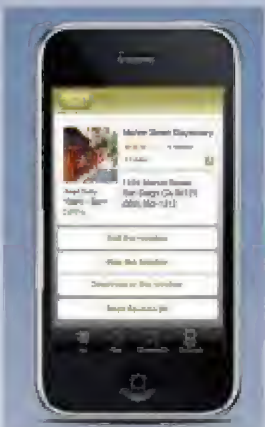
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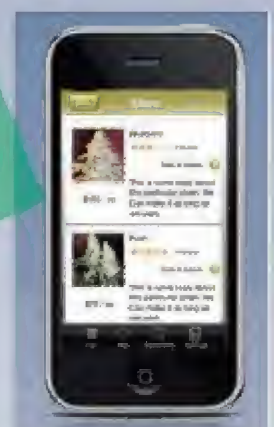
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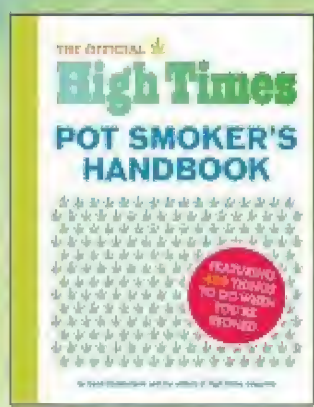


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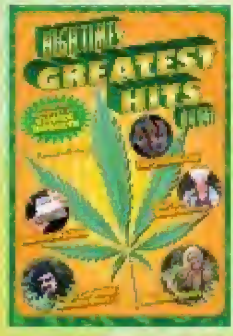
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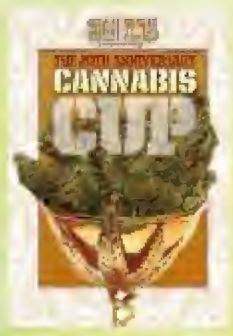
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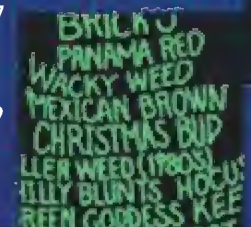
#### OCTOPUS CONSPIRACY

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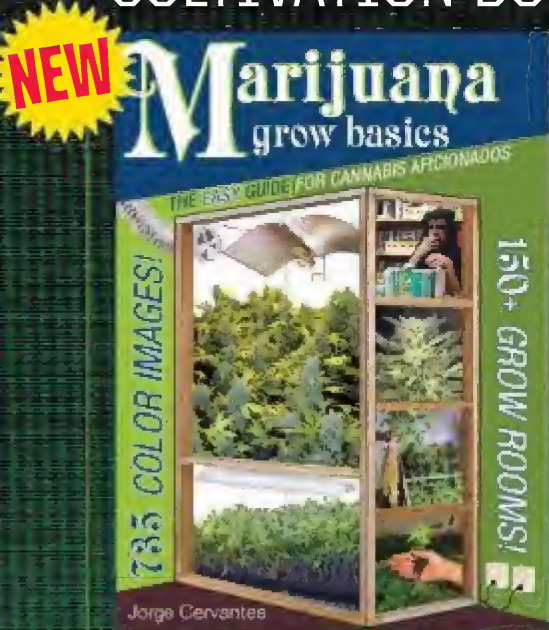
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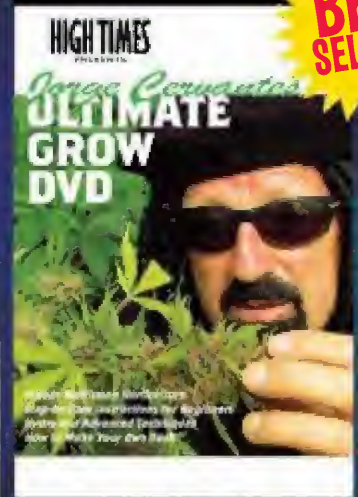
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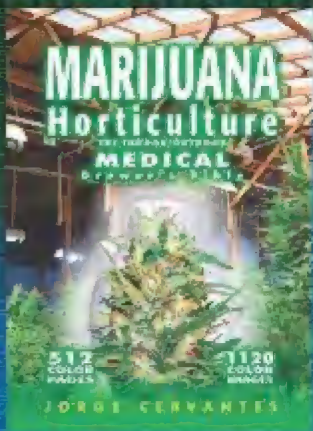


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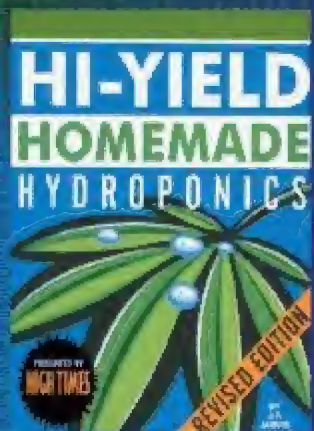


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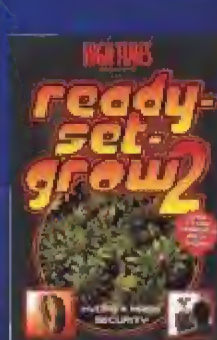
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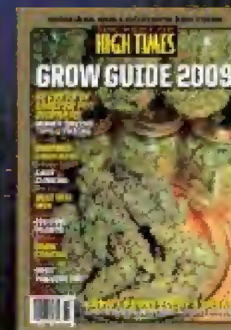
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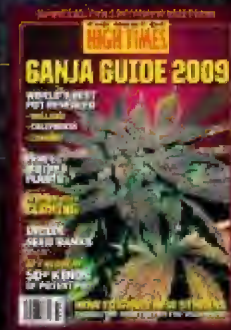
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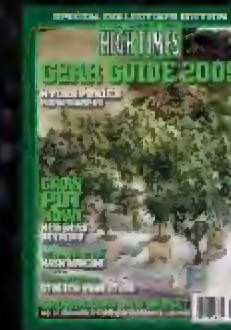
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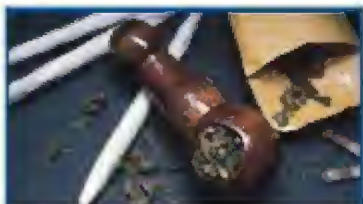
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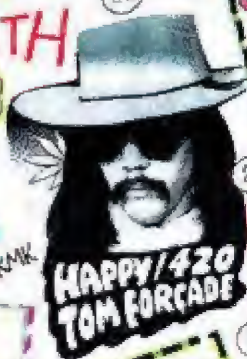
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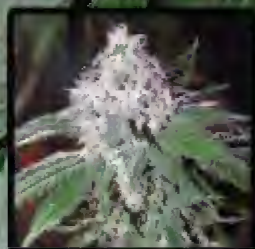
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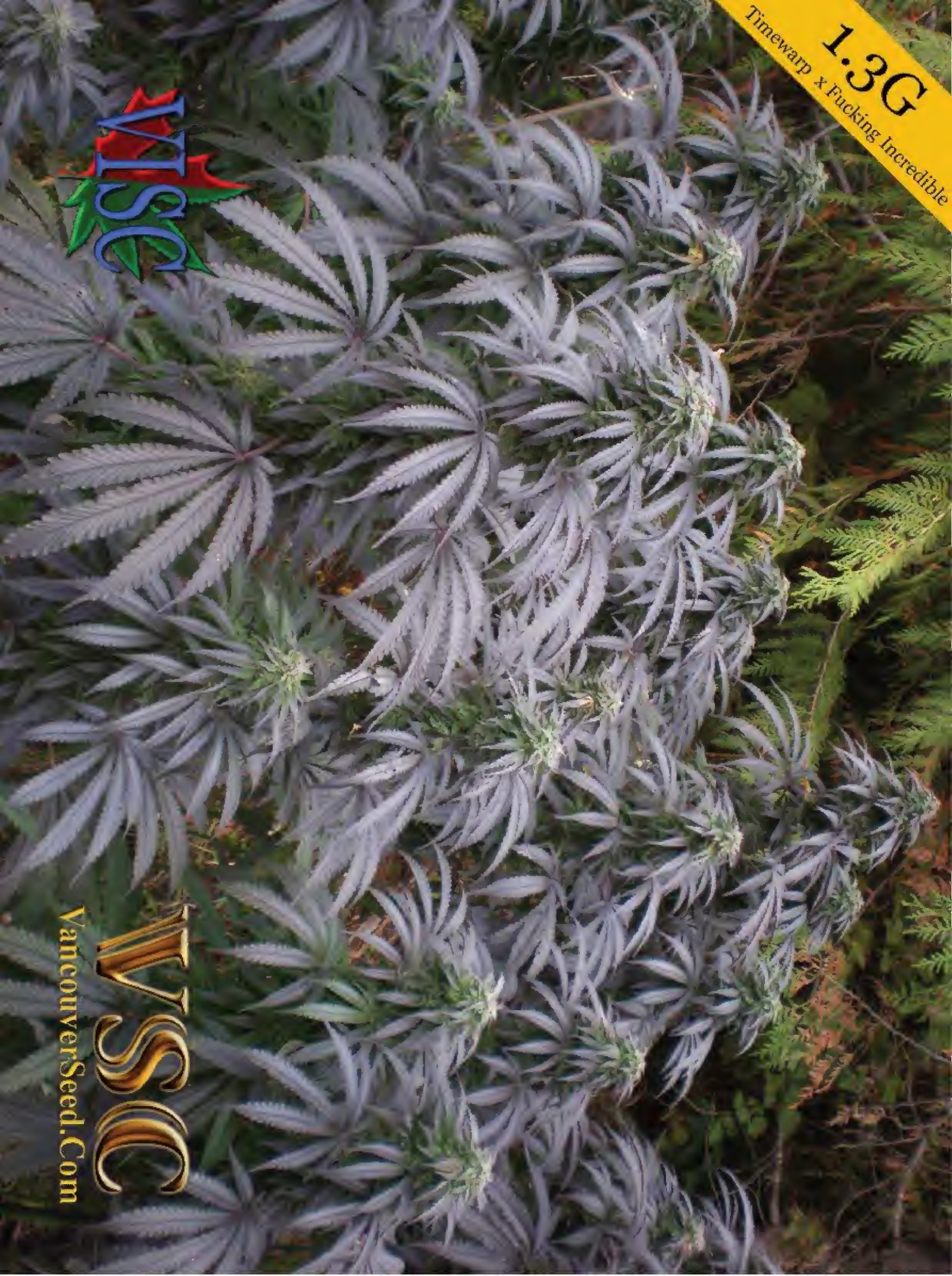
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